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Original Communications.

*AMEBIC DYSENTERY.**

BY WILLIAM OSLER, M.D.,
Professor of Medicine, Johns Hopkins University.

As, with the exception of the studies of Kartulis, the most important work on the subject of amebic dysentery has come from the Johns Hopkins Hospital, we have naturally followed the recent investigation on dysentery with great interest. I cannot here go into historical details, but the work in this country dates from March, 1890, when I found amebæ in the liver abscess of a young doctor from Panama. Ever since the question of the relationship of the amebæ to dysentery has been one of constant study. In quick succession a series of cases occurred in my wards, and were made the subject of study by Councilman and Lafleur, whose monograph has done much to make this form of the disease widely known.

I do not propose in this discussion to speak of the pathology of the disease or of the characters of the amebæ. What I wish to make is a brief statement as to the co-

*Remarks at a discussion on dysentery at the Philadelphia County Medical Society, Philadelphia, March 26.

litis, with which in Baltimore we have found the amebæ associated.

A sporadic affection, it has not occurred in wide-spread epidemics, either throughout the city or State, so far as I know, or in institutions. A very limited number of cases have been admitted to the wards, only ninety-three to date. In a few instances three, four, and five cases have come from the same locality, or three and four members of the same family have been attacked. It has involved chiefly males; only eleven females in our group. It is more common among whites than among the colored; there were only nine colored patients. It is a disease of adults; more than fifty per cent of the cases were in the third and fourth decades.

While the disease may run an acute course and may prove fatal within a few weeks, in a very large proportion of the cases it is chronic, characterized by slight fever and frequent movements, containing mucus, blood, pus, and amebæ. Many cases are from the very outset subacute; a majority of them become chronic, so that the disease drags on for many months or years, with alternating periods of constipation and diarrhea. Very few cases die of the dysentery *per se;* of the ninety-three patients in my wards, only two died of the asthenia induced by the dysentery itself. Two died of perforation.

By far the most important and serious feature of the type of colitis with which the amebæ are associated is the liability to abscess of the liver. Of the ninety-three cases referred to, twenty-three had abscess of the liver. This large percentage is due to the fact that only the more severe cases come to hospital. In Strong's seventy-nine post-mortems on cases of amebic dysentery there were fourteen instances of liver abscess.

While at first, after the work of Shiga and Flexner, there was a feeling that possibly all the forms of dysentery might be due to the bacilli, gradually those who have had the most favorable opportunities for studying the diseases have come to the conclusion that the amebic form of dysentery has well marked and characteristic differences. As Dr. Strong has pointed out in his admirable studies in Manila, where the two forms occur together, the cases can be recognized from each other and readily differentiated. In the first place the amebic variety does not seem to occur in such wide-spread epidemics. Secondly, it rarely has the very acute course, and it kills much more frequently by its complications than by the actual colitis. The chronicity and the liability to recurrence give it a very peculiar stamp. Thirdly, characteristic amebæ are found in the stools or in the liver abscess which may have followed a protracted case. Lastly, and this is a very important point in the differentiation, the serum reaction with Shiga's bacillus is absent in the amebic form. Upon this point we can speak very positively. Since the return of Dr. Flexner from the Philippines there have been some fifteen or sixteen cases of amebic dysentery in my wards, in none of which has the serum reaction, so characteristic of the bacillary form, been present.

BACILLARY DYSENTERY.

By Simon Flexner, M.D.,
Professor of Pathology, University of Pennsylvania.

The lines of demarcation between the several clinical and pathological types of dysentery are far from accurate, and the terms "catarrhal," "tropical," "epidemic," and "diphtheritic" as applied to dysentery do not signify sharply-defined entities. The clinical manifestations and pathological lesions of the catarrhal variety occur in a wide group of diseases and may be associated with other lesions and manifestations of dysentry. Catarrhal dysentery is therefore to be distinguished from those clinical and pathological conditions, of primary occurrence, to which the term dysenterry is applied with greater propriety. Ever since the time of John Hunter there have been those who, upon pathological-anatomical grounds, have separated the endemic from the epidemic disease, and the line has been even more sharply drawn during the past decade, since the discovery of amœba coli in its relations to tropical dysentery. But the distinction between the tropical and epidemic disease is far from being sharp and constant. Diphtheritis and ulceration are not safe criteria. For while the former is almost invariably present in the epidemic disease, it occurs also in the tropical malady, and may, according to Kartulis, be associated with the ulcerative amœbic variety. From our present vantage ground we may well look upon the last cases as examples of a mixture of two distinct

lesions, each dependent upon a specific cause.

As with other diseases the etiology of which is now established, and through which apparently devious processes have been brought into harmony, so with dysentery it may be expected that the etiological classification alone will produce order out of a chaotic mass of conceptions of and appellations for the disease.

There is good reason for believing at the present time that, excluding the catarrhal variety, all dysenteries are caused by two microörganisms—amœba coli and bacillus dysenteriæ. Of the first disease I shall have nothing to say, as Professor Osler will deal with it. Of the other I shall endeavor to define its forms and limitations.

Before, however, I consider this aspect of the subject I should like to review briefly the foundations upon which this belief in a bacillary dysentery depends. The presence of bacteria in the stools and tissues in dysentery has been proven many times, and no small number of bacteria have been, by different authors, regarded as the specific cause. The real difficulty encountered by the earlier investigators, from Klebs to Shiga, came from the abundance and variety of organisms met with. How to pick out the species probably the cause of the lesions was the matter of chief difficulty. This all-important question could be solved after the discovery of the Pfeiffer phenomenon—the reaction of agglutination of bacteria by diluted blood serum of animals or man infected with bacteria—and its application to the diagnosis of typhoid fever and other diseases.

Every year dysentery prevails in Japan. During 1897, 89,400 cases with 22,300 deaths (24 per cent) were recorded from June to December. Shiga recognized that four conditions must be fulfilled in the effort to show that an organism, suspected of standing in etiological relation to any disease, is really the causative agent: (1) The organism must occur constantly; (2) it must be a species not present normally in the diseased part; (3) it must be pathogenic and produce in experimental animals lesions similar to those from which it was obtained; (4) it should in virtue of its pathogenic activity in man show the agglutination reaction with the blood-sera of those who have suffered from the disease. From the series of cases (thirty-six) examined by Shiga there was obtained from the dejecta, the intestinal contents and walls, and from the mesenteric glands, a bacillus which fulfilled all these requirements (possibly excepting the exact reproduction of the lesions in animals as per No. 3), and which was regarded as the cause of Japanese dysentery.

The bacillus in question has well marked characteristics; it is a member of the great colon-typhoid group, but possesses properties which suffice to distinguish it from the other members.

In 1899 the Johns Hopkins University sent Dr. Barker and myself to Manila to study the diseases occurring there. On account of the extensive prevalence of dysentery among the American troops this disease received especial attention from us. The disease as found by us is separable into an amœbic and non-amœbic form. The latter constitutes the acute disease *par excellence,* and from it a bacillus agreeing in all respects with the organism obtained by Shiga in Japan was separated. We regarded it as the cause of the non-amœbic dysentery of the Philippines, a conclusion supported by the subsequent study of a larger number of cases by Strong and Musgrove. After returning to this country I had the opportunity to study a case of subacute or chronic dysentery contracted in Porto Rico in a patient of Dr. Musser. The same bacillus was isolated in small numbers from the stools and the thickened intestinal mucosa of this case.

A little later, Kruse of Bonn investigated an epidemic outbreak of dysentery which occurred in Laar in Germany and found a similar organism; and during the last summer my students Vedder and Duval studied a number of cases of dysentery occurring in Philadelphia, and two institutional outbreaks, one at Lancaster, Pa., and the other at New Haven, Conn., with uniformly harmonious results.

With our present knowledge the specific dysenteries can be divided into two anatomical and etiological groups: (1) Acute diphtheritic, acute ulcerative, and chronic ulcerative dysentery; (2) acute, possibly, and chronic ulcerative dysentery. The second group is unattended by diphtheritis, in it the disease does not appear in epidemics, and it is met with only rarely in the acute stages. The first group comprises the epidemic disease, the institutional outbreaks, the acutely developed and not infrequently

rapidly fatal forms; it is highly infectious, is uncommonly attended by secondary complications, is prolonged sometimes into a chronic ulcerative and proliferative disease, whereby the intestine may be deformed, and in its early stages, and sometimes in the late ones as well, is attended by diphtheritis. This second group may be taken to be caused by the bacillus of dysentery.

The evidence now in hand proves a wide distribution for *Bacillus dysenteriæ*. The studies carried on by us last summer have demonstrated the bacillus as the cause of sporadic dysentery. But what seems especially important is the proof that the terminal dysentery of chronic Bright's disease is likewise caused by this organism. That these facts are of considerable moment with reference to the question of the spread of dysentery admits of no doubt. The conclusions which can be drawn from the data which I have had the privilege of bringing before you may be summarized as follows:

1. The acute dysentery of Japan, Philippine and West Indian Islands, of Germany, and the United States are due to bacilli indistinguishable from each other.

2. Certain cases of chronic dysentery owe their beginning to the same organism.

3. The sporadic and institutional outbreaks of acute dysentery are caused by *Bacillus dysenteriæ*, and this organism is identical with that causing epidemic acute dysentery.

4. The acute bacillary dysenteries are attended by diphtheritis and ulceration of the intestine.

5. When diptheritis complicates amœbic dysentery a mixed or terminal infection with the bacillus of dysentery is to be suspected.

TROPICAL DYSENTERY WITH ABSCESS OF LIVER; RUPTURE INTO RIGHT LUNG; AMOEBA COLI IN THE SPUTUM—EXHIBITION OF CASE.

By L. Napoleon Boston, A.M., M.D.,
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The patient whom I am privileged to present before the Society is a male, aged twenty-one, who enlisted in the United States Army during the Spanish-American war and was assigned to duty in the Philippines. He was in perfect health on arriving at Manila December 22, 1899. January 15, 1900, he was taken to the hospital by reason of malaria, but reported for duty February 3. Between February and August he returned to the hospital on three or four occasions on account of dysentery, and during each attack his stay in the hospital was two or three days.

August 2, 1900, he returned to the hospital suffering from dysentery, and was not discharged until the latter part of the month, at which time he weighed 95 pounds, having lost 40 pounds during the past four weeks. On the day of his admission he had twenty-eight stools, all of which contained some blood. Bowel movements were frequent throughout the greater part of the month, but they were reduced to from three to six daily until September 16, when he was assigned a light grade of duty. The patient states that large, hard, nodular masses were palpable over the abdomen, and that when these masses were present the pain was unbearable. They disappeared after free evacuation of the bowel, to reappear whenever the bowel became loaded with the offending material. Rectal pain and tenesmus were prominent symptoms. Constipation was not present at any time during his illness, nor did he ever notice that he passed scybalous masses. After leaving the hospital he improved rapidly and remained in good health, returning to the United States June 27, 1901. I was privileged to make a physical examination of the patient during September last, when his lungs presented nothing abnormal.

I was called to see him February 4, 1902 (eight weeks ago), at which time the abscess ruptured into the lung, when he presented many symptoms common to lobar pneumonia; the onset being ushered in by two distinct chills. The expression was anxious, cheeks flushed; respirations rapid, 30 to 40 per minute; pulse full and bounding, 90 to 110; cough accompanied by free bloody expectoration, and both dull and lancinating pains at the base of the chest. There were profuse drenching sweats; and the temperature was subnormal, 98° F.

The history obtained was that during the past three months he had been subject to paroxysmal coughing each morning, which was accompanied by free expectoration, but it was not until within the last month that the sputum was blood-streaked. Until the

day previous to my seeing him the cough, though severe, did not excite pain, and while he became easily exhausted, experiencing a feeling of oppression over the liver, he was able to attend to his duties as a shipping clerk until the day of my first visit, when he was compelled to take to his bed.

Physical Examination.—Inspection of chest and abdomen revealed nothing abnormal.

Palpation elicited an area of tenderness in the epigastrium, which was bounded on the right by the costal margin, and on the left by the median line. Pressure over this region produced pain. The edge of the liver could be felt on deep pressure.

Percussion gave a resonant note over apices and the entire left lung. Over the right lung the note became impaired at the fourth interspace, in the mammary line, and increased, blending with liver dulness, which extended to the costal margins. In the mid- and posterior axillary lines the note was slightly impaired, and the area of liver dulness protruded into the epigastrium.

Auscultation gave many of both fine and coarse crackling râles over base of right lung; the breath sounds were rather harsh, but at no time did they present a bronchial element. The heart sounds were distinctly audible over the base of right lung. Left lung and heart normal.

February 24, 1902. Infra- and supraclavicular regions showed decided depressions on the right side, and the right clavicle was prominent. Expansion appeared somewhat restricted over right lung.

Mensuration: Girth of chest at forced expiration, one inch above nipple, 33 inches; at full inspiration, 36½ inches. When at rest the comparative measurements of the two halves of the chest showed the left to be one-half inch the greater. Expansion of right chest, 1¼ inches, in striking contrast with the left, which was 2¼ inches. Girth at ensiform 30 inches.

The area of dulness over the right lung was but slightly if at all changed from that previously observed; yet the degree of impairment of the note was less marked than at the time of rupture. Breath sounds over the base of right lung were still increased, and were accompanied by both fine and coarse râles. In the anterior axillary line at the seventh rib a to-and-fro murmur was heard. The heart sounds were transmitted over entire base of right lung. Fremitus was increased over right apex, and pressure over the epigastrium caused pain in the region of the liver.

Pain in the form of a girdle, encircling the base of the chest at a point anteriorly one inch below the ensiform cartilage, and laterally on a level with the eighth ribs, was a prominent and distressing feature, both before and for two days after rupture occurred. As the patient expressed it, "it felt as a tight belt," the greatest distress being between the anterior axillary and mammary lines on each side. Deep inspiration caused a lancinating pain arising at the epigastrium and radiating to the back. Inspiration also increased the girdle pain, as did paroxysmal coughing. Pressure over the left lobe of the liver not only elicited tenderness, but was capable of intensifying the pain.

Cough was at times paroxysmal and distressing, but could be allayed by the administration of codeine sulphate and heroin hydrochlorate. It was productive in character and always accompanied by a free, gelatinous expectoration, which was of a grayish color, streaked with blood, and contained many small flake-like particles. Portions of sputum appeared as though dotted with small droplets of dark reddish fluid, and this appearance persisted for weeks after rupture (when the sputum was not blood-streaked). A quantity of sputum placed in a porcelain dish and allowed to stand for a time displayed a peculiar marginal halo which was of a chocolate color. The sputum showed no tendency to liquefy, and when placed in a bottle so as to occupy about one-fourth of its capacity, and the bottle turned from side to side, the sputum was seen to change its position *en masse*, at the same time clinging to the side of the bottle. The odor was rather sweetish.

Microscopically the sputum contained amœba coli which were freely motile, and occasionally an ameba was seen enveloping a red blood cell. Many epithelial cells were present, and the flake-like particles referred to often contained cells which at times appeared in the form of radiating columns, were pale, almost hyaline, and without nuclei. A few of these cells were seen to change to a blue when treated with iodine. Many oil globules were present, and the blood-streaked portions showed blood cells, and some granular material which resembled blood pigments. It was practically

free from bacteria, yet stained specimens at times showed few diplococci; but after examination of the secretions of the throat and mouth, many organisms were found, which were apparently identical with those of the sputum. I am inclined, therefore, to regard these cocci as originating from the throat or respiratory tract. Three weeks after rupture of the abscess into the lung the sputum contained large quantities of elastic tissue in addition to the other elements above mentioned. No tubercle bacilli could be found. A series of feeding experiments have been instituted, and two cats employed for this purpose have both developed dysentery. In the stool from one of these animals amebæ have been found.

Examination of the blood gave hemoglobin 88; red cells 4,980,000; white cells 8600. Stained specimens appeared to be normal. Councilman and Lafleur (see reference 1) have reported five cases where amebic abscess of the liver has ruptured into the lung, and one of their cases showed a leucocytosis of 53,000. The above authors found the sputum to contain liver tissue, elastic fibers, and the amœba coli in four of their cases.

Treatment was first hygienic, and secondly symptomatic and supportive. Here we were dealing with a disease alien to our country, and one also infectious; and it was therefore deemed of value to collect and disinfect all sputum. The patient was instructed not to expectorate on the street or even in public cuspidors, but to provide himself with a small bottle, and in it to collect all sputum. Further, he was warned against the dangers of self-infection should he swallow any of the sputum. The teeth and mouth were carefully washed after each coughing with water and a solution of boracic acid. There were no intestinal symptoms and the feces were not disinfected.

At the time of rupture, and for two days following, the prominent symptoms were pain, cough, profuse drenching sweats, and a subnormal temperature. To combat these conditions, the following capsule was administered every two hours: Strychnine sulphate, gr. 1-60; codeine sulphate, gr. 1-4; heroin hydrochlorate, gr. 1-48; quinine sulphate, gr. 1.

The patient was sponged with warm water, to which a small quantity of alcohol had been added, twice daily. The codeine and heroin were continued throughout his illness. In view of the high-grade anemia that frequently follows infection with the amœba coli, the following capsule was given after meals: Strychnine sulphate, gr. 1-50; ferri phosphatis solubilis, gr. ij; quinine sulphate, gr. j; manganese dioxide, gr. 1-4.

Herewith is cited from the literature, credited to the following named authors, 2430 autopsies on persons dead of amebic dysentery, and in 486, or 20 per cent, of whom abscess of the liver was found.

	Total Number of Autopsies.	Number Showing Hepatic Abscess.
Ballinger (2)	35	4
Annesley (3)	51	26
W. Warring (4)	259	69
Chuckerbutty (5)	39	3
Catteloup (6)	240	47
Mouret (7)	761	133
Eyre (8)	118	27
Ranking (9)	140	41
Moore (10)	494	90
MacPherson (11)	203	46
	2340	486

1. *Johns Hopkins Hospital Report*, vol. ii.
2. Edinburgh, 1818.
3. London, 1828.
4. Trebandrum, 1854.
5. *Indian Annals of Med. Science*, xix, 1865.
6. *Recueil de Mem. de Méd. and Militaire*, vol. viii, 1851.
7. *Paris Thèsis*, No. 52, 1853.
8. *Indian Annals of Med. Science*, October, 1855.
9. *Madras Quart. Jour. of Med. Science*, vol. vii, 1863.
10. Trans. of the Med. and Phyl. Soc. of Bombay, viii, 1862.
11. Calcutta, 1850.

THE VALUE OF IPECAC IN DYSENTERY.

By Colonel Alfred A. Woodhull,
U. S. Army, Retired; Lately Assistant Surgeon-General.

I cheerfully accede to the editor's request for a paper upon the use of ipecac in dysentery, because the disease is of wide geographical range, and the remedy is of singular value, but is not generally appreciated. It is quite true that the careful laboratory examinations of to-day differentiate between similar diseases that heretofore have been grouped under the general term dysentery. But it is also true that whatever amebic and other causes we now associate with dysentery, practically we

still have to deal with the clinical distinctions of sporadic and epidemic, subdivided into acute and chronic forms, and its therapeusis has not yet been materially affected by advances in etiology. The determination of a particular cause assists prophylaxis, but well-established empirical treatment is not necessarily displaced by new conceptions of origin. In other words, however we may add to them, old methods of successful treatment have not been rationally displaced.

The one remedy which, properly used, is as conspicuous in dysentery as quinine is in the malarial fevers, is ipecacuanha. I assert this without fear of intelligent contradiction, notwithstanding the text-books generally damn it with faint praise, and say in effect, and sometimes in the actual phrase, that "it appears to be of more value in cases in the tropics than in those of temperate climates." In other words, if it is good for anything it is good somewhere else than where we are likely to see it. May not that also mean that those who use it habitually are more familiar with its efficiency? Its singular history of alternate cycles of brilliant success and complete neglect, since it was introduced into European practice in 1672, has no exact parallel. There are numerous drugs which have been thrown aside permanently after receiving high praise, but none is recalled which has again and again sustained its better reputation and has as often been repudiated. The causes are threefold: (1) The property of emesis, by which ipecac is best known, so overshadows its other qualities in both popular and professional reputation that the drug is looked upon as necessarily and purely an emetic. To give a full dose of ipecac means, for most speakers, to induce vomiting. Ipecac was at first, and in some countries where its use has been resumed still is, given simply as an emetic. As vomiting seemed necessary, the treatment appeared to illustrate and to depend upon the evacuant doctrine of stopping disease by the elimination of peccant material through vomits and purges. But as that doctrine declined so did the treatment —another instance of the subordination of facts to hypotheses. Besides, the act of vomiting is so disagreeable that many were desirous to abandon a method which no longer had the support of the medical philosophy of the day. (2) A great deal of what is sold as ipecac is not the true drug. Frequently the Brazil ipecac is adulterated or entirely substituted by a cheaper West Indian plant, which may or may not be an irritant nauseant, but is without the specific properties of the genuine root. A few years ago it was reported that three out of four bales as imported into England were damaged by sea-water or other dampness, through imperfect packing. If failure to relieve follows the use of a spurious drug, the reputation of the true remedy should not suffer thereby, although unfortunately ipecac is frequently discredited in just that way. I recall a personal example where prompt relief did not follow in a severe case of acute dysentery, but where there was immediate recovery when the same prescription was filled by another and presumably more trustworthy druggist. (3) Neglect to administer it in the proper way may lead the patient to refuse to persevere, or may discourage the physician into believing that he is only adding the distress of vomiting to the suffering of the disease. A remedy that is not retained is apt to be regarded as an essential failure.

It has been claimed that ipecac from which the emetin has been removed is as efficacious in dysentery as the entire drug. But with this I have had no experience. I am very confident, however, that nearly every case of dysentery will yield promptly to ipecac if administered in the following way: The stomach must be empty and the patient recumbent. About twenty minutes before giving the ipecac it would be well to paint the epigastrium, not the whole abdomen, with tincture of iodine, or to apply a mild sinapism sufficiently to induce gentle counter-irritation. This precaution, however, may sometimes be omitted, or may be deferred until the medicine has been taken. Ten or fifteen minims of laudanum may be given, always on an empty stomach, to be followed in ten or twelve minutes by from fifteen to thirty or more grains of ipecac in pill form, or as a paste, with a very small quantity of water. No food nor fluid should be taken for at least four hours, and recumbent rest should be strictly maintained. If the ipecac is administered in pill or capsule the laudanum may be mixed with it instead of given previously. One scruple of ipecac and one grain of opium can be made into four pills; or the laudanum can be put in the pills. When pills are used

they should be freshly made. Or twenty grains of ipecac can be suspended in two fluidrachms of water, with a few drops of an aromatic to disguise the taste. It is never well, on account of the popular idea associated with it, to disclose the name of the medicine; and the patient should be warned to resist any inclination to vomit. The size of the dose should be in proportion to the gravity of the case. Just as in severe colic very large doses of opium are tolerated, and in pernicious fever enormous quantities of quinine are indicated, so in dysentery the magnitude of the dose should bear some relation to the severity of the disease. With a little experience that relation will soon be determined. Sixty grains is not a maximum dose for an adult, but with ordinary acute dysentery from fifteen to twenty-five grains at a time should suffice. If the first or any subsequent dose is rejected, which rarely happens if the rules are carefully followed, it is to be repeated after a short interval. The retching or vomiting of exhaustion or the restlessness of delirium is no bar, but rather an inducement to this treatment; and small children or delicate women can take it with impunity in proportionate amounts.

The common course in acute dysentery is first the relief of pain, next the subsidence of fever, and then the cessation of the bloody discharges. The usual sign that recovery is at hand is a painless, copious, semifluid evacuation, much the color of the ipecacuanha powder, not black as has been stated. The medicine then may be reduced or entirely suspended. In acute cases these results will follow very quickly. In chronic dysentery complete recovery may be delayed, or, indeed, may fail of absolute attainment, but great amelioration may be confidently anticipated. That the powder should be pure and comparatively fresh is always essential.

For those curious as to its mode of action, it may be said that ipecac is not, as commonly supposed, a depressant or an evacuant, except in a secondary sense. Its primary action is that of a stimulant, more directly to the organic nerve. It controls capillary hemorrhage, whether from the nasal membranes, from the parenchyma of the lungs, or from a traumatic condition. Speaking generally, it will relieve nervous vomiting, conspicuously that of pregnancy. It is an excellent oxytocic. Its utility in atonic dyspepsia is recognized, and so is its employment as a spray in bronchial asthma and the "winter cough" of the English. It is reported to be efficacious in certain forms of delirium tremens, and it is certainly of good report among skilled men in choleraic diarrheas. If ipecac will contract other capillaries, it may be expected to do as much for those of the intestines. And before confirmed inflammation sets in, capillary leakage is the feature of dysentery. The true order is first dysentery, then inflammation, and so many confuse the one with the other. To secure the proper end the dose must be proportioned to the condition, from the infinitesimal quantity used in the vomiting of pregnancy to the large amounts required for dysentery. But that ipecac is a nervous stimulant should be steadily borne in mind. It is the master-key that unlocks the pathologic wards.

PRINCETON, N. J.

TROPICAL DYSENTERY.

BY T. S. DABNEY, M.D.,

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This disease has suddenly become of absorbing interest to us, as many thousands of our citizens, through the result of the Hispano-American war, are compelled to reside in the tropics. The gifted surgeon-general of the army, through his able corps of civil and military surgeons, has done much to clear away many of the errors entertained in reference to the etiology of this fatal malady. Johns Hopkins University, widely awake to the importance of this field of work, has put us under many obligations, through its committee, composed of Drs. Flexner and Barker. England, Germany, France, and Italy are also keenly alive to the importance of the thorough study of this, the most fatal of all endemic tropical diseases, for dysentery is truly the most formidable barrier of the white man to the tropics.

To Shiga, of Japan, is due the credit of having first clearly differentiated two varieties of this affection. He demonstrated the causal relationship of certain fine bacilli to acute dysentery. Shiga's bacillus, the

bacillus dysenteriæ, has been isolated by many observers, notably by Flexner, Craig, Strong, and Musgrave, of this country, and Ogala, of Japan. This discovery is of incalculable benefit in the treatment of the disease, and it helps to explain the brilliant results so often obtained in acute cases, especially first attacks, by means of cleansing the intestines promptly before the submucosa has been invaded and rendered suitable for infection by the deadly amœba coli, which up to a few years ago was universally considered the sole cause of endemic dysentery. The writings of Kartulis, Councilman, La Fleur, Kruse, and Pasquale have rendered the terms amebic, tropical, and endemic dysentery synonymous. Dutrouleau, though ignorant of the germ theory, considered all varieties of the disease due to one cause. At present, in view of the facts in the case, we are fully warranted, in my opinion, in claiming that two distinct diseases, due to two distinct bacilli, exist. The deductions of Simon Flexner, of Philadelphia, in reference to the probable rôle played by bacteria in the subacute and chronic forms of dysentery in enhancing the toxicity of the amœba coli, are based upon sound scientific principles. Indeed, it is more than probable, it is almost certain, that some of the numerous colonies of the myriads of varieties of bacteria that infest the colon in health, given certain conditions, such as those arising from sudden chilling of the body, fatigue, the ingestion of poorly prepared or unsuitable food, or from any cause that lowers the vital powers of resistance, render the intestine fit for the habitat of this most deadly protozoön, the amœba coli. Without the aid of bacteria it is highly probable that this bacillus would remain innocuous.

The laws of natural history are a marvel for their intricacy, and to elucidate this point the more clearly, it may not prove uninteresting to give the history of the introduction of the Smyrna fig into California. Some twigs of this much-coveted fruit tree were surreptitiously obtained and planted in California. The trees throve and grew luxuriantly. They fruited well, but invariably, year after year, shed their fruit before it ripened. Competent bacteriologists were employed to investigate the cause, and to do so necessitated a trip to the Orient. They made the discovery, a very valuable one to the American fruit grower, and equally as valuable to the science of bacteriology, that in order that the Smyrna fig might mature and reach perfection, the presence of a very small insect, the *Blastaphaga Psenes* ("the Capri fig wasp"), was necessary to carry pollen from the wild (Capri) fig to the fruit (or rather closed flower) on the Smyrna tree. In 1891 Capri figs, containing thousands of these wasps, were introduced into Niles county, California, since which date Smyrna figs have proven a great success in their new home.

As is well known, the intestine in its normal state harbors but few forms and varieties of animal microörganisms. Few in number and form are the protozoa found in the dejecta in health; but the intestine in health supports a flora rich in form, number, and variety. In my opinion the mere presence of the bacillus dysenteriæ or the amœba coli is not sufficient to develop the disease. The soil must be prepared; the mucosa must be in such a pathological state as to furnish a suitable culture medium for these protozoa. Fruits unripe or overripe, ill-prepared foods, raw liquors, heat, fatigue, cold, fright, and any other dietetic or hygienic error, by disturbing or impairing the gastrointestinal digestion, often serve, with the aid of bacteria, to pave the way for the pathogenicity of a bacillus that apparently is unable to attain any virulence on a healthy mucosa.

The very instructive paper of Strong and Musgrave, based upon experience gained in the army hospital at Manila, lays stress on the presence in acute dysentery of the bacillus dysenteriæ in the necrotic superficial layer of the intestinal mucosa. No patient ever recovers from an attack of acute infectious dysentery without irreparable damage to the membranes of his intestines. The amœba coli bacillus is seldom found except in the deeper submucosa. All physicians who have practiced much in the tropics have observed how readily first attacks are recovered from, for in these attacks, where treatment has been prompt, the deeper layers of the mucous membrane being intact, the deadly amœba coli, finding no suitable food or environment, either perishes or remains innocuous. Each recurring attack yields more stubbornly to treatment, for in many cases at least Shiga's bacillus has been supplanted by the amœba coli as soon as the soil has been rendered fit for it by repeated attacks of gastrointes-

tinal catarrh, each one of which breaks down and destroys portions of the mucosa.

So mild are many of the first attacks of acute dysentery, due in the great majority of cases doubtless to the bacillus dysenteriæ, that many experienced observers frequently mistake them for attacks of simple diarrhea, and consequently many a neglected "diarrhea" suddenly looms up as a case of fulminating dysentery. It were well for all of us to heed Dutrouleau's aphorism: "It behooves us to be uneasy about an endemic disease in the tropics." With this aphorism in view, it behooves us to treat all intestinal catarrhs, colics, and diarrheas actively, quickly, and continuously until the patient is entirely restored to health.

It would take us too far afield to go any further into the etiology or causation of the two well recognized types of endemic dysentery. Besides, this field has been so well tilled by those having at their command every resource and facility for such work. It will be my aim to dwell mainly on the treatment of this disease. First, we must disabuse our minds of the ordinary definitions of dysentery usually given in our textbooks. We must bear in mind that neither bloody discharges nor tenesmus need necessarily be present in genuine infectious dysentery. In the tropics we frequently find dysenteries without bloody discharge, and bloody discharges without dysentery (intestinal malarias, intestinal hemorrhages, etc.). An attack is often ushered in without apparent cause, without prodromata, under the guise, or rather disguise, of a simple diarrhea. The attack is usually attributed by the patient to some dietetic error, to fatigue or sudden chilling. If taken at this stage and energetically treated, the attack usually subsides quickly, but convalescence is always slow; and relapses, always grave, are prone to occur. A rigid diet for several days after the subsidence of the attack is necessary, and the patient should be kept on the sick list for ten or twelve days on an average. However, many of these attacks, though untreated, will run along for several weeks without to all appearances seriously endangering the patient's health. Sooner or later, however, the disease will gather force, and large stools, yellowish or grayish in color, and odorless, will supervene; they may or may not be accompanied by griping. These cases are the exceptions.

Usually the patient presents himself with marked evidence of pronounced debility, without however complaining of pain. He sleeps well, has no fever, and in fact presents no grave symptoms. He does not believe himself sick; thinks he is only weak and needs a little rest. Relapses, as said above, are of frequent occurrence, and various are the reasons assigned for them. They are but the march of the disease, and unless a change of climate be sought neither Therapeusis nor Hygeia can avail much. Usually but two routes lie before the unfortunate: either he will sink into a hopeless cachexia, or a fever will be kindled and the end hastened. In the latter case the stools become frequent and assume a livid color, and are accompanied by most violent and excruciating cramps; the tongue becomes red and pointed; the belly is shrunken, the pulse thready, vomiting and cold sweats supervene, and the scene ends.

It must be borne in mind that where endemic dysentery prevails malaria in many disguises, notably in that form of malaria which the Spaniards call "la fiebre paludica de los intestinos" (intestinal malaria), abounds also. Not only may this type be mistaken for dysentery, but many a case of dysentery with an intercurrent malaria may stubbornly resist all treatment until quinine is given in addition to the treatment for the dysentery. I have seen a number of such cases that promptly yielded to treatment after the addition of the cinchona salt.

Dr. J. J. Day, in the *British Medical Journal* of January 26, 1901, writes that he saw in the British hospital at Pretoria many cases with typical temperatures of malaria, yet with every other symptom of dysentery. These cases stubbornly resisted treatment until five grains of quinine every four hours was added to the treatment. I have seen a large number of patients in the alluvial lands of South America, suffering from what appeared to be dysentery, recover promptly on receiving one- or two-gramme doses of the sulphate of quinine in solution. It may be well to mention that these patients, in addition to tenesmus and flux, usually had a chill and high temperature.

In addition to malaria, dysenteric patients will often suffer from worms, notably the ankylostoma duodenale, tenia, and roundworms.

It has fallen to my lot to cure several very obstinate and unyielding cases of dysentery by administering anthelmintics after

all other remedies had failed. Two or three doses of thymol, of thirty or forty grains each, at intervals of two hours, usually suffice. This treatment should always be preceded by a brisk saline purge, and should be followed by several large high saline enemata to kill and wash the ova and larvæ out of the rectum. Bozzoli was the first to call attention to the use of this drug as an efficient anthelmintic; he used it in heroic doses, often giving as much as ten grammes a day in broken doses.

No physician, practicing in the tropics, should lose sight of the fact that malaria and worms may be a possible factor to be reckoned with in any stubborn case of dysentery. It is only by strict attention to detail that success can be attained in the treatment of this disease. When a patient suffering from acute dysentery presents himself for treatment, I first put him to bed in a well lighted and ventilated room, have him comfortably covered, and order ordinarily the following prescription:

℞ Morphinæ sulphatis, gr. ss-j;
Sodii sulphatis, ℥j;
Acidi sulphuric dil., ℥j-jss;
Aquæ cinnamomi ʒiv.

M. Sig.: Tablespoonful in two ounces of cool water every three hours.

This prescription is kept up until the stools become feculent and lose every vestige of blood. Many use the magnesium salt in preference, but to my mind the soda salt possesses many advantages, notably that of its known action on the liver, a very important action in a land of diseased livers. The addition of the sulphuric acid is a very valuable one, as it renders the intestinal secretions less alkaline, thereby inhibiting the growth of the bacilli that thrive best in an alkaline medium. When the character of the stools changes, subnitrate of bismuth in fifteen- to thirty-grain doses every three or four hours, or salol in five-grain doses every three or four hours, will generally meet all indications. The ipecac treatment, once almost exclusively used by the British and their followers, has fallen into undeserved disuse, mainly for three reasons—the unreliability of the drug, its nauseous properties, and owing to the brilliant results obtained by the far more agreeable saline treatment.

Powdered ipecac in warm countries rapidly deteriorates and becomes inert, hence it is necessary to use freshly powdered roots only. By observing a few simple rules patients can take very large doses without producing emesis. There is no question of the value of the treatment; I doubt if we have any drug with so happy an effect on the liver, and for that reason alone it should commend itself to use in the tropics. The routine treatment is to insist upon the patient lying on his back; to allow him the scantiest possible amount of liquids, and to keep his stomach as free as possible of food. Then order thirty drops of laudanum to be taken by the mouth thirty minutes before a bolus, containing from thirty to sixty grains of ipecac, is given. A sinapism should be applied over the epigastrium. A similar dose should be given every four to six hours, and the treatment kept up for twenty-four or forty-eight hours. This treatment succeeds where the saline treatment fails, and *vice versa*.

Whatever treatment be pursued, strict attention should be paid the diet, but stricter attention yet to the patient. As soon as the patient's powers begin to flag, a generous diet of broiled fish, roast beef, eggs, soft, shirred, or poached, mutton chops, and some good red wine should be substituted for the spare diet. A most agreeable drink in all stages of this disease is made by adding ten to fifteen minims of dilute nitrohydrochloric acid to a half-glass of cool water, this drink to be taken every three or four hours. It is a valuable adjuvant in the treatment. Besides aiding digestion, stimulating the liver, and toning up the system, it retards the growth of the bacilli as well as bacteria by lessening the alkalinity of the intestinal secretions, thereby proving a genuine curative agent. When the disease assumes a subacute or chronic form valuable assistance is often rendered by the judicious use of the silver nitrate. This remedy, much abused in former times, as attested by the many "blue men," if used with judgment, is a most valuable one. It may be given in two ways. My plan is to order

℞ Argenti nitrat., ℈j;
Fullers' earth, q. s.

M. Ft. in pil. no xxx. Sig.: One pill three times a day an hour before or after meals.

During its use salt or food with much salt should be avoided. This prescription should not be repeated. If it fail resort should be had to the topical use of the salt, as follows:

℞ Argenti nitrat., ʒss.
Aquæ dest., Oij.

M.

This should, by means of the rectal tube, be slowly injected in the rectum as high as possible, the patient's hips being elevated. This clyster should not be repeated oftener than once in twenty-four hours. No ill results follow the topical use of this invaluable remedy.

However, wherever practicable, by far the best results in these sad cases are obtained by a change of climate, preferably to a cold one. In all cases of dysentery a sharp lookout must be kept on the liver. In acute and subacute hepatitis valiant service is rendered by the nitrohydrochloric acid baths, administered night and morning as follows:

℞ Acid nitrohydrochloric (fortis), ʒj;
Aquæ tepidæ, Oxij-xvj.

M. Sig.: Place the feet in this bath, and sponge legs, insides of the thighs, and over the region of the liver for fifteen minutes night and morning. If the bath bites too much add more water.

During an attack of dysentery, or after its subsidence, chills at irregular intervals, especially at night, intermitting fever, pain in right hypochondrium, or right shoulder-blade, nearly always indicate that suppurating hepatitis has supervened. An aspirating needle will clear up the diagnosis, and when pus is found a free, very free, opening should be made and the wound treated properly.

Abscess of the liver is hardly a complication of this disease; it is but another form of it determined by the same endemic cause, the ameba. This fact should always be borne in mind.

From what has been written it is clear that prophylaxis is our main reliance in protecting the lives of our citizens in the tropics—pure water, suitable diet, appropriate clothing, avoidance of debauchery and the immoderate use of alcoholics, regular hours, abstemious habits, and a moral and hygienic life.

DYSENTERY IN NEW ORLEANS: ITS TREATMENT.

By E. M. Dupaquier, A. and Sc.B. (Paris), M.D. (Paris),
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During seventeen years of active practice in subtropical New Orleans I must say I never saw an epidemic of dysentery; but the following cases have come under my notice:

1. A very large number of cases of acute inflammation of the colon and rectum, with characteristic blood and slimy stools, of which ninety-five per cent were of the mild form peculiar to all localities in the temperate zone.

2. Cases of house infection, outbreaks in families and in an orphans' asylum. After an average duration of a week, the attack terminated favorably, with the exception of a few deaths in the orphan asylum, evidently due to individual debility.

3. A comparatively small number of cases of typical acute dysentery, with its characteristic prodromes, adynamia, articular pains, duration from two to four weeks, and disposition to relapse.

4. A small number of typical chronic cases, as compared with the frequency of simple chronic diarrhea, the former but seldom accompanied with detectable suppuration in the liver.

I have learned from practice in New Orleans, in families, in asylums, and in our Charity Hospital, that among the poor and wealthy alike the various expressions of what is termed dysentery are clinically infectious and transmissible. In fact, I am in favor of classing dysentery among the infectious diseases to be reported to our city Board of Health.

Were all the forms of dysentery I have seen in New Orleans caused by a specific bacillus, or coccus, or protozoön, or an ameba? I am sorry I have no local bacteriological report to offer as yet, but since bacteriology has not solved this question in other quarters, each of us may express an opinion. As early as 1879, Laveran and Teissier taught and wrote (Nouveaux Éléments de Pathologie et de Clinique Médicales) that dysentery was "a specific enterocolitis." Though our masters preach by example "exact science" and "immediate cognition" by demonstrations and facts, yet even their intuitive views leave an impression in our minds. Practice has deepened that impression of my school-days, and in the light of recent events and developments I enjoy the philosophical conviction that dysentery is specific.

The saline treatment of dysentery, concerning which so much was said and written—and justly so—in recent literature, as a specific in the acute forms of the malady, has been actually employed in New Orleans, with its usual good results.

An eminent local practitioner, J. A. Lam-

bert (Paris), now deceased, told me in 1885 that he had learned in New Orleans from old local practitioners how effectively to use *"le sel admirable de Glauber"—i. e.*, sodium sulphate—in the acute forms of dysentery. As a matter of fact and of record, this old method of treating acute dysentery, transmitted *viva voce* from generation to generation among French local practitioners, appears in print in Dutrouleau's Traité des Maladies des Européens Dans les Pays Chauds, 1861-1868. The treatment by evacuants, the most rational, as we understand it better, to-day, is plainly and distinctly recommended at that early date, in preference to the treatment by opium or by astringents or by both combined, and of the evacuants the sodium and the magnesium sulphate are mentioned as the best, when manna and buttermilk could not be had.

The original formula given is the following: 15 or 20 grammes in 500 cubic centimeters of water or thin lean broth, to be given in small doses.

This is the prescription my old friend Dr. Lambert had used, and I have used it myself, after his advice, since 1885, with good results, in four tablespoonful doses every two, three, or four hours, according to the severity of colics, which it relieved, and the appearance of fecal stools. It should be continued three or four days after the reappearance of the latter.

I am, therefore, well prepared to join in the growing legion of the saline treatment followers, with a backing of strong, hard facts. I am not surprised at all at the phenomenal reports of Buchanan, Rouget, Jervis, and others.

What else could I add on the subject which may prove of interest, unless it be that I used with good results the French routine of giving ipecac in emetic doses, before the beginning of the saline treatment, each and every time a marked gastric infection was exhibited by the tongue, and that I used with good results the systematic application of heat over the whole body, with the addition of one centigramme of morphine by needle, in severe forms, *in cases of collapse from pain and exhaustion*, with far better results than with the employment of alcohol, digitalin or strychnine by mouth or needle, combined with rectal laudanum-starch-mucilage injections, measures which are unreliable.

I shall add, in conclusion, that in all forms, mild or severe, acute or chronic, first attacks or exacerbations, my requisites are the following: Absolute repose in bed, feet and abdomen well wrapped in warm cloths, skin kept clean with warm soap-suds, and bowels irrigated with warm normal salt solutions every four hours. Specimens of urine examined every day. Starving diet, viz., a cup of thin lean broth every two hours given lukewarm until tongue clears up; then a cup of diluted milk and light egg-water, with salt, every two hours.

In chronic cases, with the requisites above mentioned, the medicinal treatment consists of an astringent instead of a saline evacuant, bismuth benzoate, in doses of 50 centigrammes every two hours, and purging with calomel 25 centigrammes, and castor oil 40 cubic centimeters, two hours apart, every week.

A lingering case of two months' standing, an Italian, in my ward in the Charity Hospital, got away practically cured, after a three-weeks' course of the treatment outlined above; the absolute rest and the starving diet acting, I believe, in this case as most potent factors.

Chiefly foreigners, of unhygienic habits, in New Orleans, have the relapsing form, and those that come to me, as I cannot think of improving their habits, are told at once to go back to their native places and stay over fully two years after their recovery before returning.

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*THE TREATMENT OF DYSENTERY.**

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In the treatment of all forms of dysentery, limiting the use of this term to the conditions which have been described here tonight, there can be no doubt that early instituted measures very materially influence the progress of the disease; or, in other words, if the malady is permitted to continue for any length of time without active medicinal interference, it becomes exceedingly difficult to cure because such pathological changes have taken place in

*Part of a symposium on dysentery at the Philadelphia County Medical Society.

the tissues of the intestine that not only must the results of these changes and the microörganisms which produce them be removed or destroyed, but in addition a considerable period of time must elapse before healthy tissues can be developed which will result in the performance of normal intestinal functions. So far as diet is concerned it is self-evident that all foods should consist in those substances which are readily digested and absorbed from the stomach and the duodenum in order that as small a residue as possible may pass on downward into the large bowel, where, by its presence, it may produce mechanical injury to the tissues with which it comes in contact, or produce conditions which are favorable to the growth of the various microörganisms and the development of a still greater degree of inflammation.

In this connection it may not be out of place to point out that milk, which is so universally resorted to in the treatment of all forms of diarrhea, is not always as useful a form of nutriment as it is thought to be; for not uncommonly it will be found that when milk is taken it remains undigested, or forms curds which are indigestible because of the feeble secretion of digestive juice, which curds pass through the bowels and afford pabulum for microörganisms which, in turn, are injurious to the mucous membrane. If it is given, it should certainly be diluted freely with lime water, barley water, or Vichy water, or else it should be peptonized in order that its digestion may be readily performed, and it is of vital importance in this connection that it should be given in small quantities frequently rather than in large quantities, since its tendency to overload the digestive apparatus in its feeble condition will manifestly produce unfavorable results. Solid food is of course contraindicated, but semisolid foods like milk-toast, the digestion of which is aided by pancreatin or taka-diastase, and a very soft-boiled egg, will often prove a better diet than one which is more liquid but less nourishing, since the physician, in the presence of dysentery, is faced by two opposing factors: On the one hand a feeble digestion, and on the other hand the necessity of supporting vitality to the highest possible point by the administration of proper foodstuffs.

The treatment of the condition itself may be divided into three methods, and each one of these parts finds ardent advocates amongst those of the profession who have had sufficient experience to make us feel that their opinions are of value.

The ipecac plan may be considered among the first of these, and it cannot be doubted that physicians in tropical countries have found it of benefit in so large a number of cases that it is impossible to consider that they have been mistaken in their clinical observation. It will be remembered that its use under these circumstances is almost entirely empirical. So far as we know, any influence which it produces is brought about by reason of the fact that it tends to produce a rather profuse flow of bile in such patients, and the close connection which exists between torpidity of the liver (to use a popular phrase) and congestion of this organ, with congestion of the colon, makes its employment under these circumstances more rational than would appear at first glance. The ipecac is commonly administered in large doses, and vomiting naturally ensues. After vomiting has taken place, small doses of three grains are given every hour and continued until a profuse, black, tarry stool is passed, this stool being considered a most favorable sign, and vomiting being controlled by the use of opium, which also relieves tenesmus and pain. It may be necessary in this vigorous plan of treatment to freely employ stimulants, but under these circumstances alcoholic stimulants had best be avoided because of their well known influence upon the liver. It has been thought by some that the opium is largely responsible for the beneficial results that follow this treatment; but, on the other hand, it is a fact that the use of opium alone, while it may temporarily relieve pain and tenesmus, often in the end makes the patient worse, in that it locks up in the bowel microörganisms and secretions which nature, if left to herself, would endeavor to get rid of by purgation.

The other plan of treatment which is quite worthy of our consideration is the purgative plan, which has come forward so largely in the medical press within the last few years; probably because of increasing experience on the part of American and English surgeons in the Philippines and in South Africa. Here, again, clinical evidence is rapidly accumulating which proves beyond all doubt that in a certain propor-

tion of cases of acute dysentery, the employment of sulphate of magnesium combined with aromatic sulphuric acid is a most advantageous method. The bowels are first thoroughly moved with the Epsom salts or with Rochelle salts, and then aromatic sulphuric acid is given freely, so that it will exercise its well known astringent or constipating influence. This plan is a more rational one than that which concerns the employment of ipecac, in that it is a well known fact that the microörganisms which are commonly found in the intestines in dysenteric cases are destroyed or rendered inert by an acid medium, and it has long been known by the profession that the administration of sulphuric acid is apt to produce an acid reaction of the stools, so that its beneficial influence in dysentery does not rest alone upon its astringent effect, but upon its power to destroy the infecting microörganisms, just as its use in Asiatic cholera meets the double indication of restraining diarrhea and destroying the comma bacillus.

The third plan of treatment consists in the administration of intestinal antiseptics, of which perhaps bismuth salicylate, benzonaphthol, and salol have been most commonly employed. Theoretically, it is easy to conceive that these substances may be advantageous, but practical experience has, we think, shown that they fail to exercise the degree of antiseptic influence with which they are credited, and while they are undoubtedly useful as what might be considered side-tracks of treatment, they are not of sufficient importance to justify their employment to the exclusion of the ipecac or saline methods which have just been described. The employment of calomel and corrosive sublimate in these cases as intestinal antiseptics is often followed by good results, but here again the antiseptic influence probably obtains an amount of credit which it does not deserve; the real value of these substances resting upon the fact that they increase the activity of the liver, both in destroying toxic material and in secreting bile.

In the brief space which is allotted to this paper, this is all that one can say in regard to the internal treatment of dysentery. Without doubt its local treatment by high intestinal irrigations is of very great value. Suppositories do not reach the difficulty. On the other hand, copious clysters which will reach far up into the descending and transverse colon are necessary. In a number of instances the writer found that injections of sulphocarbolate of zinc, in the proportion of 20 grains to the pint, have produced very satisfactory results; the zinc acting both as an astringent and antiseptic. Other practitioners have employed copious injections of weak solutions of nitrate of silver of the strength of a drachm to three pints, and the tenesmus which is frequently associated with the dysenteric condition, or the introduction of the soft rectal tube, can sometimes be avoided by the use of a 10-grain iodoform suppository used half an hour before the injection is to be given. This suppository, by its local anesthetic effect, is of service, and we have thought that the absorption of the iodine from it was also advantageous. When the weather is intensely hot, the patient febrile and the belly tender, an injection of ice water is sometimes advantageous. But it should not be employed unless it is grateful to the patient. While tannic acid in weak solutions has been highly recommended in many cases of cholera, it does not seem that it is particularly advantageous in dysenteric cases.

The method of giving the intestinal lavage is of considerable importance. It should not be given by means of a Davidson's or other pumping syringe, but always by means of a fountain syringe or surgical irrigator. The pressure employed should never be greater than two or three feet, and it is much better that the injection should be gently given, so that it takes fifteen or twenty minutes to find its way up into the intestine, than that it should be delivered forcibly enough to produce angry contractions of the bowel, which will cause great agony and so much irritation that the treatment makes the patient worse.

Where great irritability of the bowel exists, it is probably better to employ two rubber catheters side by side, one being for the intake and the other for the outflow, since in this way great distention of the bowel is avoided. In instances in which cold-water injections seem inadvisable, very hot water may be employed, but I believe that it is distinctly disadvantageous to employ tepid water, which has a relaxing and enervating effect, and does not possess the healthy stimulant effects of marked cold or high heat. I am also firmly con-

vinced that where pure water is used, it is best to employ normal saline solution, since by this means maceration of the intestinal mucous membrane and ulceration is avoided, and we all know the beneficial influence of normal saline upon the surface of a healing ulcer in distinction from that of the rather harmful influence of pure water upon such a raw surface.

It is needless to remark that the treatment of dysentery, if considered exhaustively, would necessarily involve the preparation of a paper which would be far too long, and the foregoing remarks are designed to present a brief summary of some of the more recent views in regard to the therapeutics of this malady, which is not, as some have thought, peculiar to tropical climates, but is often met with in fairly severe forms in temperate zones during periods of high heat, or even at other times where the hygienic conditions are distinctly favorable, as in the various epidemics of so-called "asylum dysentery," in which hygienic and dietetic measures must play a very important part in the cure of the condition.

This article is, however, not complete without reference being made to one pathological condition and two forms of treatment which have not been referred to. The first is that form of dysentery which complicates certain cases of renal disease of an advanced type, and which may perhaps depend upon the bacilli of Shiga, which is mentioned in Dr. Flexner's admirable contribution. In such instances, of course, active measures should be taken to aid the kidneys in eliminating impurities from the body, since it is possible that the irritation of the colon depends upon the elimination through the bowel of toxic materials which ordinarily escape by the kidneys, or that the lowered vitality of the patient as the result of his renal disease makes him unduly susceptible to dysenteric infection.

A method of treatment which promises much, but which has only recently been tried in that form of dysentery which depends upon Shiga's bacillus, is that which has been written about in such an interesting manner by the late Dr. Eskridge, of the United States Marine Hospital Service, who has recorded the very excellent results which have followed the employment of antibacterial serum in the treatment of dysentery in Japan, where the disease is not only endemic but epidemic, and where the results which have accrued are surprisingly good. This serum is not in the nature of an antitoxic serum, but an antibacterial serum—that is to say, it does not antagonize toxins made by Shiga's bacillus, but renders the body unsuitable for the growth of this microörganism.

The other form of treatment to which I have referred is that which is directed to combating amebic dysentery by means of injecting quinine, in the strength of 1-to-5000, sufficiently high in the rectum for it to exercise its fatal effect upon the ameba coli. This is a definite specific method of treatment resting upon as rational a basis as the employment of quinine in malaria, and it is to be hoped that with the discovery of the cause of asylum or epidemic dysentery an equally efficient remedy may be discovered which will affect Shiga's bacilli as actively as quinine affects the ameba coli.

AORTIC ANEURISM TREATED WITH SILVER WIRE AND ELECTRICITY.

Considering the inefficiency of medical treatment, says FREEMAN *(American Journal of the Medical Sciences,* December, 1901), and the comparative efficiency in aortic aneurism of silver wire and electricity, it is probably better to proceed to the latter at once. Wiring is not a dangerous process, and it is in the early stages of an aneurism, when the sac is still firm and the patient is in good condition, that the best prospect of cure exists.

Soft, undrawn, unalloyed silver wire devoid of spring—wire just as it comes from the shops—is preferable to the hard, highly drawn wire alloyed with copper and full of spring. It is hardly necessary to coil the wire.

It is still an open question as to which is preferable, a large amount of wire or a small amount, with the theoretical advantages in favor of the former.

A strong electric current is apparently preferable to a weak one.

The cannula through which the wire is introduced should be inserted just within the sac, and no further.

There is little if any danger of bursting the aneurism from increase of pressure due to coagulation in a part of the sac only.

The Therapeutic Gazette

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Leading Articles.

THE STUDY OF DYSENTERY.

We are glad to be able to present to our readers in this issue of the THERAPEUTIC GAZETTE a series of papers upon the important subject of tropical dysentery, a subject in which our interest has greatly increased during the last few years because of our new tropical possessions and the studies which have been made concerning the micro-organisms which are associated with its development. While tropical dysentery is, as its name implies, a disorder of the tropics, it is not to be forgotten that closely related if not identical conditions often develop in persons living in more northern latitudes, and we believe that a careful perusal of the several papers which are now contributed by distinguished students of this disease will aid all practitioners in gaining a better conception of intestinal disorders.

THE TREATMENT OF GASTRIC ULCER.

Our readers probably have not forgotten the fact that during 1901 we published an extensive article upon this subject by Dr. D. D. Stewart, and notice has been taken in the Progress columns from time to time of various medicinal and surgical measures which have been suggested for the relief of this condition. Quite two years ago we called attention to the suggestion made by Fleiner that gastric ulcer should be treated by introducing into the stomach very large quantities of bismuth subnitrate, held in solution in a mucilage, so that it would be precipitated upon the surface of the stomach, coating the ulcerated mucous membrane. The exact plan which Fleiner recommended consisted in the use of a few ounces of Carlsbad or Vichy water taken the first thing in the morning on awakening on a perfectly empty stomach, and following this an hour later by 75 to 150 grains of bismuth used in the manner described. Half an hour after this dose of bismuth, the morning meal is allowed. The treatment is repeated every morning, sometimes twice a day, and then if the patient seems materially better the quantity of bismuth which is used may be gradually diminished or replaced by magnesia. Fleiner believes, however, notwithstanding the reports which have been made concerning poisonous effects produced by enormous doses of bismuth, that there is no danger in the prolonged administration of this remedy for a number of weeks.

The diet should consist almost entirely of milk, and if there is any discomfort in the stomach, either when the patient is on this diet or when it is increased to a semisolid food, Vichy water, or some other mild alkaline water, should be administered at meals to combat excessive acidity. Fleiner believes that this plan of treatment which he has suggested is not only useful in acute ulcer but also in chronic ulcer with much induration, and, where the condition is chronic, he gives as much as 300 grains of the drug; its elimination by the bowel being aided by the employment of rectal injections. Previous to its use in these cases he believes that the stomach should be washed while fasting, and the bismuth not given until the wash-water comes away quite clear. So, too, in cases of gastric ulcer complicated with narrowing of the pylorus

he believes that by the careful and frequent administration of food, the use of lavage, and the administration of bismuth, we can greatly increase the comfort of the patient. He also suggests that many of these cases are better if they submit to gastroenterotomy as early as possible.

In those cases of gastric ulcer which form deep pouchings of the stomach wall bismuth is contraindicated, and in one instance he found a large concretion of bismuth in such an eroded cavity.

Naturally, it occurs to our readers that the differential diagnosis of this pouch-like form of ulceration as compared with the ordinary form must be surrounded with various difficulties. But Fleiner states in his recent paper that a useful point in his differentiation is that in these cases the particles of bismuth which are washed out of the stomach when lavage is performed are black in color, while ordinarily they are gray; the subnitrate of bismuth being converted into the black oxysulphide in those instances where pouching of the ulcer has occurred.

There can be no doubt that gastric ulcer is in many cases the *bête noire* of the physician. Like acute articular rheumatism it sometimes yields readily to treatment, and in other instances is most obstinate and persistent in resisting all therapeutic measures which the most skilful physician can apply, causing the patient an amount of discomfort which is very great, and sometimes endangering life through profuse hemorrhage or perforation.

We believe that the plan proposed by Fleiner is a useful one, and should be borne in mind by physicians who have obstinate cases to treat. That there are objections to it must be self-evident to any one. For example, we all know that obstinate constipation is frequently associated with gastric ulcer, and this constipation is sometimes difficult to overcome because we do not care to put purgatives into the stomach. Naturally, the administration of such enormous doses of bismuth subnitrate as Fleiner suggests leads to a very obstinate form of constipation. By the continual use of rectal injections and the occasional employment of purgatives the alimentary canal is rid of the bismuth continually. If any purgatives are used, the best ones under these circumstances are probably the salines, and the best of all of them is probably Carlsbad water, or an artificial salt made to represent it where Carlsbad water itself cannot be employed.

There are several other drugs which are so useful in gastric ulcer that they ought not to be forgotten. One of these has been employed for so many years in the treatment of this condition that it seems hardly worth while to mention it, namely, the nitrate of silver. It has been claimed that this drug is so speedily decomposed when it comes in contact with organic matter that it is probably reduced even while still in pill form before the patient has swallowed it. It has also been thought that much of the benefit which has followed its administration when combined with hyoscyamus or opium has depended upon these drugs and not upon any influence of the silver salt. But whatever the influence of hyoscyamus and opium may be, in these cases it seems to be a fact that nitrate of silver possesses distinct beneficial influences in many cases of gastric ulceration and catarrh. Where pain is not an obstinate symptom we believe that it is a mistake to employ opium if it can be avoided because it is so apt to become a habit, and if it is given by the mouth it is sometimes apt to increase gastric acidity rather than to decrease it. So that should it be used at all it should be given in the form of morphine hypodermically.

Another drug of very considerable value in this condition is chloretone given in solution in doses of from three to five grains, or in capsule, and in other instances a mixture containing a few grains of chloral, and a few grains of sodium hyposulphite in peppermint water is a useful prescription to be taken before meals to diminish acidity and gastric tenderness. Sometimes, too, we think that the application of one or two small fly-blisters on the abdominal wall over the stomach exercises an advantageous influence, and we are also convinced that some cases of gastric ulcer will do best if the milk is given them frozen, or, in other words, if it is of the consistency of ice cream. The difficulty with ice cream in many cases is that it contains egg and an excess of sweetening material which is apt to ferment in the stomach. In place of these proteid foods it is often advantageous to give the patient small quantities of barley or wheat gruel or strained rice, and to aid its rapid digestion and assimilation by the use of taka-diastase, which converts the starch speedily into glucose and thereby saves the digestive organs from activity,

and yet provides the system with those food substances which are necessary for the proper maintenance of its nutrition.

Years ago physicians were wont to depend very largely upon beef tea as a nourishment in exhausting diseases, and it took many years of careful teaching to impress upon the minds of the profession that in many instances patients receiving beef tea really starved to death. There is still some missionary work to be done in this direction, and medical men should understand that after all proteid articles of the diet list, as we obtain them from animal tissues, are often of less value to the sick man than are carbohydrate articles obtained from the vegetable kingdom, which often have mixed with them strong nitrogenous material. While it is true that proteid substances are necessary to existence, it is also true that the carbohydrates and hydrocarbons are the foodstuffs which provide the energy which is necessary for the maintenance of vital functions. This important fact was pointed out many years ago by the late Professor Fick, who showed that increased muscular work affects mainly the metabolism of the fats and the carbohydrates, and that the excretions under active exercise which are mainly increased are CO_2 and water, and not urea and its allies. While it is true that the average case of gastric ulcer ought to have absolute rest, it is not to be forgotten that the circulatory, respiratory, and digestive systems are constantly using up energy and that comparatively little energy is provided in the small quantities of food which the patient is allowed when suffering from gastric ulcer.

THE EMPLOYMENT OF CREOSOTE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

When, nearly fifteen years ago, Sommerbrodt published his paper in which he highly praised the influence of creosote in the treatment of pulmonary tuberculosis, the profession all over the world began employing it in large quantities for the relief of the symptoms of the disease, and in many instances with the firm conviction that it would produce a cure. As with so many other remedies for this disease which have been highly praised, medical men have come to regard it at the present time as a substance which is now and then, but not always, of distinct advantage, and we think we are not exaggerating when we state that the conclusion has been reached by most persons that it does not have any direct and material influence upon the tubercular process in the lung. It has been our experience that creosote does most good in those instances in which there is a catarrh of the mucous membrane lining the bronchial tubes, which gives rise to the large amount of cough and expectoration from which the tuberculous person suffers. In cases where these symptoms were not marked, and yet in which the localized pulmonary lesion was present beyond any doubt, we do not remember any instance in which the use of creosote seemed to be advantageous, and we do recall patients in whom its employment seemed, if anything, to be harmful in that it tended to disorder the stomach, which organ is the most important one to keep functionally intact in all forms of wasting disease.

Our attention has once more been called to this matter by an interesting article in the *Journal of the American Medical Association* of February 1, 1902, by Dr. Burroughs, of Asheville, N. C. His experience illustrates in the first place how wide has been the employment of creosote. Thus in over 2000 cases he finds that thirteen out of every fifteen patients were either taking creosote or had had it prescribed when he saw them, and that during the last few years the percentage has been even larger than that just named. In this connection it is interesting to remember that Dr. Holland, of San Moritz, Switzerland, which is the great English resort for pulmonary tuberculosis, in an article contributed to the THERAPEUTIC GAZETTE a few years since, stated that in every instance patients coming to that resort had been dosed with creosote, and that in his experience it had never done any material good. Dr. Burroughs believes that much of the prejudice of the laity on this point and disappointment to the physician is due to the administration of an impure article. He asserts that no plain beechwood or any other wood creosote should be given either by the stomach or applied locally. Creosote made by a double distillation from beechwood tar is practically free from carbolic acid and all other impurities, and is not nauseating or irritating in

its influence, in his experience. As a test for pure creosote he suggests Morson's method, which depends upon the solvent power of glycerin upon carbolic acid, since carbolic acid can be dissolved in glycerin in all proportions, while creosote is insoluble in glycerin or nearly so. Therefore, if on the addition of a so-called creosote to glycerin a perfect solution takes place, we may be sure that the product is really carbolic acid rather than the pure creosote. So sure is Burroughs of these facts that he asserts that doubly distilled creosote may be administered in very large doses to the delicate stomach with no damage, and he believes that five or ten minims of creosote is far too small a dose to be of any material value, good results only being obtained when 60 to 100 minims a day is administered by the mouth.

We are glad to see that Dr. Burroughs emphasizes one fact in which we have always had a firm belief, namely, that it is almost useless to administer the various pharmaceutical preparations which are placed upon the market containing creosote, since it is impossible to give a sufficient dose of creosote in these cases without giving too large a bulk of the other ingredients of the prescription. He also believes that creosote subcutaneously given in the proportion of one part of creosote to two of sweet almond oil is of very great advantage to many patients, when there is idiosyncrasy on the part of the stomach to the drug. When given by the mouth it should always be administered on a full stomach, starting with 20 minims a day and increasing one minim daily until 60 is reached, then dropping back to 40 minims, and gradually increasing to 80 minims; and finally 100 minims is to be taken and continued for long periods. Dr. Burroughs also believes that creosote is a valuable drug in tuberculosis of the genito-urinary tract since it is eliminated largely through the kidneys, and so convinced is he that the drug is of value that he thinks it ought to be continued many weeks after all pulmonary symptoms have disappeared.

We are interested to note that in the discussion that followed Dr. Burroughs's paper, Dr. Bonney, of Denver, pointed out that creosote was not universally successful, or even useful, in cases of pulmonary tuberculosis, although he regretted that sometimes patients refused to take this remedy when he thought it advantageous. He believed that in cases of bronchitis with scanty expectoration it did harm, and in this respect he is entirely in accord with ourselves. Hallberg did not believe that Morson's test was reliable, and he inveighed against the employment of concentrated preparations of the drug, saying that to use it in this form was similar to the method employed by railroad men for preserving the wooden ties from decomposition.

In other words, our views in regard to the employment of creosote in pulmonary tuberculosis should be identical with those concerning the employment of all drugs in the treatment of disease, namely, to acknowledge that every remedy has distinct limitations, and that it cannot be universally employed with success. Until physicians recognize this more fully, many therapeutic procedures must have registered against them as many failures as successes.

PHOTOTHERAPY.

Within the last year we have called attention in the editorial columns, and in the Progress columns as well, to the interesting results which are being obtained by various investigators in the use of light rays in the treatment of superficial diseases. As with many other remedial measures the influence of which at first sight seems somewhat mysterious, we find that already charlatans are employing phototherapy in irregular methods for the alleviation of various forms of incurable diseases, and a homeopathic quack in a large Western city has filled the despatches to the newspapers with accounts of impossible cures which he has effected in various diseases, such as carcinoma of the stomach, by the use of artificial light. It is important, therefore, that regular physicians should have a clear conception of the conditions in which phototherapy should be applied and of its limitations in producing a cure. It is known to all those who have taken any interest in this subject that the chief credit should be given to Dr. Finsen, of Copenhagen, who first placed it upon a scientific basis. Aside from numerous experiments which have been made upon the influence of sunlight and other light upon bacteria, a very considerable amount of research has been carried out in regard to the influences of the various rays

of light upon pathological processes not dependent so far as we know upon microörganisms. It has been found, for example, that the typhoid bacillus, the anthrax bacillus, and the bacillus pyocyaneus grow best in the dark; next best in red light; and poorest in the ultra-violet light. Indeed, the latter rays practically prevent the growth of the three microörganisms named. That the influence of sunlight is also powerful upon human beings is well illustrated in the well known "sunburn," which at one time was thought to be due to the heat rays of the sun, and which is now known not to be a burn, but due to the action of chemical rays on the skin. This is an explanation of the fact that persons often burn more severely on cloudy days than on sunny ones, and a somewhat similar erythema may be produced by exposure to an arc lamp of very high voltage where the heat is low and the chemical rays powerful. It will also be recalled that when Finsen first began employing light for the purposes of therapeutics his investigations were concerned chiefly with smallpox, and he showed at that time that if chemical rays were prevented from acting on the skin, the inflammation and suppuration of the pox was diminished, the secondary fever abolished, and the scarring largely avoided. This effect was practically produced by placing a red blind over the window of a patient's room to exclude all the chemical rays. That this influence upon smallpox is a fact, and that the light treatment affords one of the best means for the relief of lupus, is now well recognized by scientific men.

From what we have said about this matter on a previous occasion it will be remembered that the treatment consists in excluding all but the chemical rays of light, and that the latter are allowed to fall upon the affected part. Finsen also found, it will be remembered, that it was necessary to exsanguinate the skin by pressure in order that the rays might penetrate sufficiently deeply to produce a therapeutic influence, and this was accomplished by pressing against the part lenses of quartz crystal, through which the rays may pass. Finsen also found that the electric light might be employed, although that which is found in the current for incandescent purposes is practically useless, as its chemical rays are very feeble. The arc lamp, such as is used for lighting streets, is even more effective than sunlight. When it is used the rays from the powerful arc lamp are concentrated by means of a cylinder and lenses made of quartz, and between two of these lenses water is circulated to cut off the heat rays. The methods of Finsen have been considerably advanced by Lortet and Genoud of Lyons, who found that if a patient was brought up close to an ordinary arc lamp of 10 to 15 amperes, the time of treatment could be reduced from one hour to fifteen minutes, and the cost of obtaining the current was greatly reduced; a larger area also being exposed at one time. The direct current and not the alternating one should be employed to get the best results.

While there is no denying that the light treatment takes a long time to produce its results, on the other hand it cannot be doubted that the percentage of cures produced by it is, considering the conditions in which it is employed, very large. Thus, out of 456 cases of lupus treated by Finsen, 130 have not recurred during periods of from one to five years; the rest of them having been under observation less time than that. Even if recurrence does take place the treatment can be renewed, and, as is well said in an editorial in the *Quarterly Medical Journal* for February, 1902, from which a large amount of the information contained in this article is taken, "when we consider the pain and disfigurement and disappointment which previous methods of treating lupus have caused, it must be acknowledged that even if Finsen's discovery has not done all, yet in the treatment of lupus it has marked a great advance."

REPORT OF THE COMMITTEE OF SEVEN ON THE PROPHYLAXIS OF VENEREAL DISEASE IN NEW YORK CITY.

The report of the committee on the prophylaxis of venereal disease in New York City has not excited the interest or received the comment which such a study of the most prevalent and, in its final effect, most crippling and fatal, disease of a dense population would seem to warrant.

The committee deduces from the replies to circular letters sent to various public institutions and to private practitioners in New York City, that there were 225,000 cases of venereal diseases treated in private and public practice last year, and this total is regarded as rather under than above the actual number. Nor do these figures repre-

sent the sum total of venereal cases, but only those actually treated during the year. Neither does this estimate take cognizance of venereal diseases from which the floating population suffers, and which, acquired in the city, are carried to all parts of the country.

In the face of these figures venereal disease does not exist officially in New York City. Comparing venereal diseases with other contagious affections which were officially recognized by the Board of Health, it was found that measles attacked 12,530 cases in the same year, with 816 deaths, and the other contagious diseases showed even smaller numbers attacked, though diphtheria caused the death of nearly 2000 persons. As to the mortality of venereal diseases, it seems fairly well proved that this was larger than the mortality from all the other contagious diseases combined.

Considering the prophylactic measures against prostitution, the committee says that a calm and impartial study of the practical results of State regulation would seem to demonstrate that registration does prevent a certain amount of infection in men. The much smaller proportion of infections which can be traced to legal prostitutes, and the much larger percentage of venereal diseases in women not regulated, are evidences of its value.

State regulation, however, has so many countervailing disadvantages, and is vulnerable from so many points of view, that the movement for its modification or abolition in many European countries will probably result successfully. Private prostitution represents the most dangerous phase of the evil from both a sanitary and moral point of view. The committee firmly believes that, in the interests of morals and decency, prostitutes should be segregated in retired quarters of the city or in certain streets which must be deliberately sought for. They would rigorously suppress street solicitation, nor would they allow designating marks, such as red lights or other indications of the nature of a house of ill fame.

The committee believes that prostitution should be looked on as a sanitary sin, and that it should be supervised like any other trade which menaces the public health by the vice which it engenders. They would, hence, require compulsory registration of every case of venereal disease. The physician would thus report not only the nature of the affection, but its origin whenever practicable, not necessarily giving the name and address of the patient. Likewise, all public institutions, hospitals, dispensaries, and the like should be required to report diseases of venereal origin. There should be established, also, a bureau with sanitary inspectors and a bacteriological laboratory.

The committee favors the enacting of penalizing laws against the transmission of syphilis, although it recognizes the difficulty of a just enforcement of such laws. Also the law of consent should be raised, since it is shown that a large proportion of infections may be traced to young prostitutes. Moreover, there is a very general feeling that juvenile vice is rapidly growing. As a corollary, the laws safeguarding minors from procurers should be rigorously enforced, and such creatures subjected to the severest penalties.

Perhaps the most important recommendation the committee makes is that in regard to education. In the first place, the profession should be educated in regard to the importance of deciding upon the conditions of admissibility to marriage of venereal patients. The dangers of promiscuous intercourse should be clearly set forth to the young men of high schools and colleges. Patients should be instructed concerning the danger of conveying the disease; the restrictions against this class of disorders which often prevents the sufferer from seeking hospital aid should be removed. Furthermore, quack advertisements of charlatans should be suppressed.

It is safe to predict that all these recommendations will be neglected; that a population which will cheerfully spend millions for the limitation of smallpox will adopt no active measures directed toward the lessening of diseases infinitely more lethal under present conditions; that even the beginning and principal cause of the evil—*i. e.*, street solicitation—will remain as unrestricted as any of the many harmless and legitimate forms of peddling.

RESULTS OF SURGICAL TREATMENT OF MALIGNANT DISEASE OF THE STOMACH.

It sometimes happens that the zest with which the modern surgeon attacks ailing organs so carries him away that the true objects of his art—alleviation of pain, prolongation of life, and the curing of dis-

ease—are overlooked. He so glories in the recovery from the effects of interference that the ultimate welfare of his patient is completely forgotten. Because of a natural tendency in the human mind to exploit successful cases, there has grown in the profession at large a confidence in the ultimate success of certain procedures which is not well founded.

This is particularly well shown by the latest investigations into the subject of tuberculous peritonitis and its cure by operative means. It is further demonstrated, at least in part, by Mikulicz's report of his own personal experience in the surgical treatment of cancer of the stomach. He stands as the chief exponent of this branch of surgery, and his conclusions are as authoritative and trustworthy as are those from any single source, and infinitely more so than those derived from a statistical study of reported cases.

In about ten years, 458 cases of cancer of the stomach had been under observation in the clinic at Breslau. The diagnosis had been positively confirmed in every instance.

Some cases (128) were not operated upon because the radical removal was impossible and no operative procedures were indicated, or because the patients refused operation. In 67 cases not subject to operation the total duration of life from the beginning of the disease, as inferred from symptoms, averaged 11.2 months.

Simple exploratory incision was made in 44 cases, with an operative mortality of 9 per cent, and with an average duration of life after operation of 4.8 months; from the beginning of the disease, 14.3 months.

Combining the cases submitted to exploratory laparotomy with those which were not operated upon, the average duration of life was a little over thirteen months from the beginning of the disease.

Twenty-seven cases were subjected to gastrostomy, with an operative mortality of 15 per cent. The average duration of life in those who recovered was 11.1 months from the beginning of the disease. This leads the author to restrict this operation to those cases in which the growth obstructs the entrance of food into the stomach, subjecting the patient to severe suffering from hunger and thirst.

Twelve cases were subject to jejunostomy, and seven died. Mikulicz believes that this operation should be entirely abandoned, the belly being closed without further procedure when gastroenterostomy is impossible.

The mortality of 143 cases of gastroenterostomy was 33⅓ per cent. Even in the last three years it was 26½ per cent, with an average duration of life from the beginning of the disease of 14 months, but if the operative deaths are included this is reduced to 12.3 months, a period somewhat shorter than that which may reasonably be expected when no operation is performed.

Of the cases subjected to resection of the stomach, over 30 per cent died. In later years the death-rate has been reduced to 25 per cent—that is, slightly lower than the mortality for gastroenterostomy.

Fifty-eight of the patients who survived were afterward followed up. Twenty were still alive between 6 months and 8¼ years. Of these, 17 were alive longer than one year, 10 longer than two years, and 4 longer than 3½ years. These last four may be regarded as radically cured.

Mikulicz believes that not only is resection of the stomach attended by less mortality, than gastroenterostomy, and by a greater prolongation of life, amounting to ten months, but that it affords much more relief to the pain, this ceasing, digestion taking place under normal conditions, the body weight increasing rapidly, and the patient for a time feeling perfectly well. After gastroenterostomy, improvement is temporary, and may not take place at all. Hence, Mikulicz considers gastroenterostomy as of little value in the treatment of cancer of the stomach, and restricted in its usefulness to those cases in which the disease is located in the pyloric regions and causes stomach obstruction. Resection, however, should be practiced freely, even when it is obvious that a radical cure is impossible. The incision is carried through healthy tissues, and examination has shown that usually the disease in the stomach itself is completely eradicated. This radical method of operating makes it advisable to close both the duodenum and the stomach, reëstablishing communication by a gastroenterostomy. The high mortality of the operation is chiefly due to peritonitis and pneumonia. The latter, Mikulicz suggests, is of embolic origin.

Gastroenterostomy has been so enthusiastically lauded as a panacea not only for cancer but for many other ills to which the stomach is subject, and has been given the credit of so safely, generally, and satisfac-

torily accomplishing the objects for which it is performed, that some misconception has arisen on the part of the profession at large as to the true seriousness of this procedure and as to its frequent failure to bring relief. Though the mortality is lower when it is performed for the relief of conditions other than those incident to cancer infiltration of the stomach, it is at the best a formidable operation, exposing the patient to great dangers, and too frequently exercising no beneficial effect upon the disease. If Mikulicz reports 26½ per cent mortality in an experience of 143 cases, it is not probable that surgeons of less manual dexterity and experience will accomplish better results.

The main factors in prognosis in cases of malignant infiltration are early diagnosis and prompt resection, since the safety and ease of the operation are inversely proportionate to the size and age of the growth.

Reports on Therapeutic Progress

THE TREATMENT OF XANTHOMA OF THE EYELIDS.

LEVISEUR, in the *Medical Record* of December 7, 1901, has this to say in regard to this condition and its treatment:

Internal medication in the form of arsenic, phosphorus, turpentine, etc., is absolutely futile. Excision is recommended by the majority of authors, and is practiced extensively. It is done with a pair of curved scissors, followed by careful suturing of the wound with a very fine needle and silk. In cases of superficially located patches, this method of treatment is efficient; but if practiced on large or deep-seated spots, it is liable to be followed by a disfiguring scar, or even ectropion or epiphora. It is also very difficult to remove all the affected tissue at once in this way, on account of its irregular extension into the deep layers of the integument.

The Paquelin cautery is not applicable by reason of its radiating heat. The galvanocautery, on account of the absence of radiating heat, is undoubtedly preferable to the Paquelin; but the destruction which is produced is too far-reaching, and therefore somewhat beyond the control of the operator. The same may be said of caustics (nitric acid, carbolic acid, chloride of zinc, arsenical paste, etc.). Some authors have devised measures to safeguard the eye and the healthy skin against excessive cauterization by using a layer of thin metal or strips of adhesive plaster, exposing only the affected area.

Electrolysis has none of these disadvantages. It attacks the deposits of degenerated tissue in an elective manner, and its action is strictly local and at all times under perfect control. Furthermore, the pain connected with it is very moderate. The hydrates are formed on the negative pole (needle) and combine with the fat of the xanthoma cells, forming a saponaceous material which partly escapes in the form of a lather at the point of entrance of the needle, partly remains in the tissues, with continuing destructive action. In order to reach the xanthoma deposits, it is necessary to introduce the needle horizontally with the skin, penetrating in the direction of the levator palpebrum muscle.

In a previous communication, attention was called by the writer to the establishment of local anesthesia produced by the galvanic current on the negative pole. This anesthesia is the same as that which is produced by the forcible endermic injection (infiltration) of an inert liquid—for example, water—by aid of a hypodermic syringe. It is probably due to the formation of free hydrogen, which forces the liquids formed simultaneously with the hydrogen rapidly into the tissues. The intensity of this anesthesia is in direct proportion to the voltage of current. The voltage would, therefore, be equivalent to the pressure exercised upon the piston of the hypodermic syringe. A current of one-half milliampere and thirty volts will render a spot of the size of a pea anesthetic in two or three minutes. After that the amperage of the current may be increased without causing pain. It is advisable to let an assistant manipulate the rheostat, while the patient touches the sponge electrode connected with the positive pole, and the operator introduces the needle connected with the negative pole. In this manner the current can be started very gradually and increased without the production of unpleasant shocks. The hand of the milliameter should be brought back to zero in the same gradual manner. A current strength of two to three milliamperes is sufficient, but it must be continued for about thirty seconds. Some experience, however, is required in order to judge if the needle should or should not be left *in situ* for a somewhat longer period.

The electrode to be connected with the positive pole, advised by the author some years ago, is very useful in this operation. It enables the patient to close or to open the current by simply closing or opening the hand, and, by more or less compressing the sponge of the electrode, to increase or to decrease the current strength independently of the operator. In order to introduce the needle in a horizontal direction, as pointed out above, it is advisable to have the needle fixed at an angle of about forty-five degrees.

After the operation there are sometimes edematous urticarial swellings, which, however, soon disappear. Patches more superficially located soon assume a dark greenish color, the deeper ones become brownish or almost black. It is hardly possible to remove the somewhat larger spots at one sitting, but two or three sittings are usually sufficient. No dressing is required after the operation, except, perhaps, the application of a little dusting-powder, boric acid, oxide of zinc, or starch. The patient should be directed not to rub or to wash the parts which have been treated. It is found that in this manner a considerable quantity of the caustic alkali, developed by electrolysis around the needle in the tissues, is left in place, and allowed to continue to exercise its destructive action. A firm adhering scab is formed as early as the second day. It is often surrounded by a slightly raised area of inflammation, which gives the spot an umbilicated appearance. In some cases it takes rather a long time before the scab is dropped. After it has become detached, any remaining xanthomatous tissue is well exposed to view, exhibiting a strikingly bright yellow color. It seems that, by the inflammatory action produced after the first application, the deeper deposits are lifted toward the surface, where they are within easy reach for further electrolytic treatment.

TREATMENT OF ABORTION.

C. B. Reed gives the following advice in *Medicine* for December, 1901, in regard to the therapy of abortion. He thinks that after the sixth month the sharp curette becomes a dangerous agent in the uterus, for the walls of the organ are frequently so softened that the curette may scrape through to the peritoneum or be pushed through the fundus.

It has been demonstrated that the normal uterus and vagina will drain very satisfactorily if let alone; hence, unless there is indication of severe hemorrhage, it is better after curettement to leave both the uterus and vagina free from gauze packing. The uterus is now free to contract, the serous and other discharges flow away unhampered to the outlet, and the chances of infection are greatly diminished.

The use of ergot to hasten the abortion by stimulating the contractions is generally advised, but the practice should be unhesitatingly condemned. The tetanic contractions induced by ergot are not favorable to the satisfactory emptying of the uterine cavity. In the cases where it is usually exhibited, the tampon accomplishes the same result more efficiently and certainly, and is safe with all, while ergot is an unreliable and dangerous agent. The somewhat trite saying that "ergot should be avoided while anything remains in the uterus" is to be definitely enforced here. The use of ergot should be reserved for those cases where hemorrhages threaten, after the complete evacuation of the uterus and in cases of subinvolution.

The tampon, properly applied, is an invaluable aid in abortions. It stimulates uterine contraction, dilates the os, and stops hemorrhage both mechanically and dynamically, besides maintaining a condition of surgical cleanliness. The clot which forms on top of the tampon mechanically causes the separation of the ovum in a very natural and satisfactory way.

There are conditions, however, where the tampon cannot be employed. The principal contraindication is in the presence of sepsis. After the sixth month also the uterus is so large that it can contain a large amount of blood, and here the vaginal tampon should only be employed in association with uterine packing.

The application of the tampon is made with the patient on the table or in the cross-bed position. The pubic hair is clipped. The external genitalia are scrubbed with green soap and douched with lysol solution two-per-cent, followed by 1:4000 bichloride. The patient is catheterized, and the vagina washed with green soap and hot water, followed by lysol douche two-per-cent. The hands and instruments are prepared as for a laparotomy.

To be effective, the portio vaginalis should be entirely surrounded by gauze or cotton pledgets introduced by dressing forceps

under visual control, while the perineum is depressed with a Sims speculum. Then on the broad base made by the pledgets and the os, the vagina is gradually filled to the vulva and a binder applied. Unless the vagina is packed tightly the tampon fails of its mission, and if too tight it gives unnecessary discomfort.

The temperature is taken every four hours, and a rise of 1.5° F. indicates the removal of the tampon.

The necessity for asepsis in all cases must be reiterated; the fact that pregnancy and labor are physiological processes does not free the woman from danger of infection.

It is hardly questioned that the introduction of substances from without constitutes a more serious menace to the woman than any evil she may develop unaided, hence it is desirable to avoid unnecessary interference of every kind, including the douche. The time for the douche is before and after the curettement, to cleanse the canal and wash out any loose detritus from the uterus and vagina, and to provide for the elimination of germs introduced from without at the time of the operation; but here its function ends. It is unnecessary, useless, and injurious both in normal labor and abortion, as the experiments of Kronig, confirmed by Doderlein, Menge, Williams, and others have shown. The germs in the vagina are normally in a state of attenuated virulence, being rendered so by the peculiar acid secretion of the vagina bacillus. Wadsworth has shown that pathogenic germs exceptionally persist in the vagina throughout pregnancy and labor, and where present in severe cases they persist after repeated douching with 1-to-5000 bichloride. This agrees with Kronig's experiments fully. Kronig has also shown that the vagina requires more time to eliminate pathogenic organisms after douching than without. In normal cases the vaginal secretion renders the organisms inert in twenty hours; after douching, thirty-six to forty-eight hours is required. The douche simply removes the protective secretion and gives the organisms a better chance to thrive. Furthermore, the attempt to sterilize the vagina by douching alone is no more reasonable than to attempt to sterilize the hands by allowing a few quarts of hot antiseptic solution to run over them. In proscribing the douche, a false friend of many years is banished, together with a multitude of elevated temperatures.

In case of abortion where sepsis is already present, as shown by the elevation of temperature and rapid pulse, or by a rapid pulse while the temperature remains near the normal, active intervention is urgently indicated. The uterus should be curetted at once and the cavity thoroughly washed out with a hot one-per-cent lysol solution. Bichloride is to be avoided.

When the uterus is once thoroughly cleaned and irrigated, it seems best to leave it entirely alone and "treat the patient" by assisting her to resist the toxins which the uterus takes up. These cases ought never to occur in practice where the patient has been under the control of the physician from the first, but even when met with, if treated at once, they usually terminate happily; but when decision is reserved and the case treated expectantly, the results are not so satisfactory. It is a well known observation that the fatalities from abortion are mostly among cases criminally produced.

When the patient is profoundly anemic from sudden or long-continued hemorrhage, the urgent symptoms can be temporarily relieved by the introduction of from one to five pints of normal salt solution by means of an aspirating needle, all being carefully sterilized. The needle should be introduced under, not into, the mammary gland of one or both sides, as may be required.

It would hardly seem necessary to refer to the tent, except for its occasional unwelcome appearance. Under no circumstances can the use of tents be justified. They are unnecessary, imperfect, and it is not possible to completely sterilize them. This latter condition also renders them injurious and dangerous, and precludes their use by conscientious practitioners.

The introduction of styptics into the uterine cavity must be expressly condemned as unnecessary and always harmful. An exception is possible in the case of iodine, which is the least objectionable.

Every abortion must be regarded as a severe surgical case and treated as such in justice to the patient and the attendant. The practitioner should be alert at all times to impress upon his clientage that abortion is a very serious matter and requires the best judgment and skill obtainable in its management, for where one woman passes through these perils successfully, many are seriously affected, either directly or remotely, and no physician can be free from anxiety until the case is terminated.

THE TREATMENT OF PUERPERAL INFECTION AT THE BOSTON CITY HOSPITAL.

In the *Boston City Hospital Reports* for 1901 HIGGINS states that in the wards under his care no regular treatment has been carried out as a matter of routine in all cases. Many cases are promptly curetted immediately on admission to the hospital, and it is believed that by so doing serious infections are thus headed off in many instances. If the infectious process has not extended beyond the endometrium, if the uterus remains large and soft, if there are retained products and there is a profuse foul discharge from the uterus, it is believed that curettage is of marked benefit in that it removes the focus of the disease and the decomposing material, and that it favors involution of the uterus. If there are no retained products and the uterus is firmly contracted it is useless to curette, as it is probable that there has been direct absorption of the infectious organism at the placental site or through cervical or vaginal lacerations.

Curettage of the puerperal uterus is an operation easily and quickly performed, causing little pain and no shock, and for which it is usually unnecessary to give an anesthetic. Following curettage, and in certain cases when that operation is not necessary, intra-uterine douches of a dilute antiseptic solution once or twice daily are of value chiefly for their effect in washing away putrid discharges.

Weak bichloride and also sterile normal salt solution have been used in large quantities, and the latter, so far as can be determined, seems to be as efficacious as the former. Recently, however, weak solutions of formalin, one-half to one per cent, have been used in a number of cases with apparently good results. The antiseptic qualities of formalin are well known, and in addition it seems to have certain penetrating powers not possessed by the other antiseptic solutions.

From marked success in the treatment of several cases of old sinuses which had resisted all attempts at healing by all other methods, the writer was led to use formalin in intra-uterine douching.

Nearly every rational method of treatment proposed for puerperal infection has been tried at the hospital, but with no better success than has been attained by the means mentioned here. Hysterectomy, however, has not been done as yet. The subcutaneous injection of normal salt solution, which has been reported as curative in a number of cases, seems to act as a stimulant only, and to a limited extent.

VARIOUS METHODS OF INFANT FEEDING—BREAST FEEDING, BOTTLE FEEDING.

FISCHER, of New York, states the following rules in the *New York Medical Record* of November 30, 1901:

Bottle Feeding.—When breast milk cannot be obtained, then pure cow's milk should be used for bottle feeding. The ideal milk is milk which has been secured from a reliable dairy in which all modern sanitary laws are so applied that the hygienic condition of the cow's stable is perfect.

If milk is bought from the average dairy in New York City, it is rarely less than from twenty-four to forty-eight hours old. Such milk certainly requires Pasteurizing or sterilizing if we are compelled to use it for the feeding of infants. It must not be supposed that sterilizing or Pasteurizing milk which is contaminated with either pathogenic or non-pathogenic bacteria will alter its quality, for we cannot convert an unhealthful milk into a healthful milk by any steaming process yet devised. Toxins contained in milk, and which are always elaborated by microörganisms, cannot be destroyed even by subjecting the milk to a temperature of 300° F.

Public benefactors commence at the wrong end when they seek to convert milk contaminated with bacteria into a sterile fluid by steaming the same. What is gained by means of the boiling or steaming of the milk is simply the destruction of a large number of bacteria. It is impossible to destroy all microörganisms unless the milk is subjected to Tyndallization, which really means renewing the sterilization on three successive days for a given time. That this is impractical and next to impossible is at once apparent.

Objections to sterilized or steamed milk consist in the fact that the heated milk has undergone chemical changes. The latter are chiefly found in the casein, which is rendered much more indigestible when heated. All heated milk has a tendency to constipate, and it is only necessary to compare the stools of two children—one child being fed on raw milk, the other on heated

milk. It will be found that the digestion of the raw-milk baby will be far greater than that of the steamed-milk baby. In other words, the stool of a baby fed on raw milk will be of a more homogeneous consistency than that of the other baby fed on sterilized or Pasteurized milk.

The greatest objection to feeding with sterilized milk consists in the fact that the majority of such children offer a greater tendency to the development of scurvy and rickets. Milk that is steamed or boiled lacks the element of freshness, which we know will produce scurvy, the same as happens when an adult is deprived of fresh meat and green vegetables.

Only recently K. Oppenheimer, in Munich, published a series of experiments in the *Deutsche Medicinische Wochenschrift* of February 14, 1901, showing that milk generates H_2S when heated longer than five minutes. He used filtering-paper saturated with acetate of lead, and noted the increasing brownish-black deposit, depending on the length of time that the milk was heated. Thus, while milk heated five minutes showed a brownish color, that heated twenty minutes converted the filtering-paper saturated with lead solution into an intense, blackish-brown color. Oppenheimer therefore believes, based on his experiments, that the albuminoids, or more properly speaking the albumin, in milk is decomposed, as proven by the liberation of sulphuretted hydrogen, after milk is heated five minutes or longer in a steamer.

The following case taken from the author's clinical notes will serve as an example of how to feed with raw milk: An infant, seven months old, had been wet-nursed, and was brought to his office with the history that the child had been well until it was six months old, seemed to gain in weight from six to eight ounces weekly, and appeared satisfied after nursing. The stools had been quite regular up to one month ago; since one month the infant's weight remained stationary, the stools had been of a greenish color and contained many curds. The infant was very restless and wanted to nurse all the time; it did not appear satisfied, and seemed to cry most of the time. The breast milk was sent to a chemist, who reported the following:

Amount sent, 1½ ounces.

Reaction	slightly alkaline.
Specific gravity	1.03105
Fat	1.22
Proteids	0.98
Sugar	7.07

It was also learned from the clinical history that the wet-nurse had menstruated quite profusely for one week, and during that time the baby seemed to be colicky. After receiving the above chemical report, which showed the deficiency of both fat and proteids, orders were given for the child to be weaned. The following food was then prescribed:

Raw milk, 6 ounces;
Barley water, 2 ounces;
Half teaspoonful granulated sugar;
Pinch of salt.

Warm the milk in a water-bath for three minutes before feeding. Feed every four hours.

On the alternate days were ordered:

Raw milk, 6 ounces;
Oatmeal water, 2 ounces;
Half teaspoonful granulated sugar;
Pinch of salt.

Warm the milk before feeding, and feed the baby every four hours.

Thus the baby received one day oatmeal with milk, and the following day barley with milk. In order to give the child something that would act as a general tonic, tablets containing one minim of nux vomica were ordered, to be given three times a day before the feeding, dissolved in a teaspoonful of water.

The stools were carefully watched, and the mother reported that twenty-four hours after commencing this raw-milk feeding the stools were yellowish, and the child seemed to be satisfied. One week following this plan of treatment the child gained six ounces, at the end of two weeks fourteen ounces more, making a total gain of twenty ounces in two weeks. It must be understood that each child must be watched carefully, and that we must aim at the gradual substitution of whole milk, rather than give milk diluted with the cereals as above prescribed. If therefore, the appetite warrants it, seven ounces of milk can be given a baby, diluted with one ounce of rice or barley water; this to be followed in a few weeks—if the stools, the general gastric condition, and the absence of vomiting will warrant it—by pure cow's milk.

In the case reported the white of a raw egg, with some sugar, was ordered, fed with a spoon, and also gave the child some steak juice, or roast-beef juice, or a concentrated soup made from meat containing sago, farina, or hominy, at noon, midway between the milk feeding.

The average child requires about one quart of cow's milk divided into four portions of eight ounces each. In addition a

bread pap, consisting of crackers or zwieback, soaked in soup, will be found advantageous. It is worthy of note that three weeks after the above change from the wet nurse to the cow's milk was commenced two lower teeth made their appearance.

THE TREATMENT OF PYLORIC CANCER.

Editorially the *Medical Press and Circular* of November 20, 1901, reminds us that for some years past surgeons in various parts of the world have exercised their ingenuity in devising measures to obviate the distressing consequences of cancer affecting the neighborhood of the pylorus. The symptoms associated with cancer in this situation are almost entirely due to the mechanical obstacle to the onward passage of the gastric contents created by the resulting stenosis. At first surgeons restricted their efforts to removing or circumventing the obstacle, either by manual dilatation, as suggested by Loreta, or by one or other method of gastroenterostomy, thus short-circuiting the upper part of the alimentary canal. The study of the post-mortem appearances subsequently emboldened surgeons to go a step further, and by removing the diseased portion of the stomach to attempt a radical cure. Although, so far, the results of this form of surgical intervention have not realized the, perhaps, too sanguine hopes of the operators, the measure of success has been sufficient to justify further observation. At present it is open to question whether the extra risks attending the major operation of pylorectomy are compensated by greater comfort and prolongation of life as compared with the relief afforded by the comparatively mild operation of gastroenterostomy. The relief to the urgent and distressing symptoms of pyloric stenosis afforded by the latter operation is immediate and pronounced, and the only drawback to its usefulness is the ephemeral duration of the improvement.

In view of the extremely unfavorable condition of a large proportion of patients suffering from gastric dilatation following pyloric cancer, it is urged by some eminent surgeons that gastroenterostomy ought always to be performed in the first instance, advantage being taken of the subsequent improvement in general health to attempt the radical cure later on. Against this suggestion must be placed the fact that, as it is, these cases do not as a rule come under surgical treatment until the progress of the disease is such as to defy its entire eradication, and any further avoidable delay is therefore to be strongly deprecated. This brings us to the question of diagnosis. Here, as in so many other departments of surgery, surgeons complain that they are not asked to operate until success is jeopardized or rendered impossible by the extension of the growth. Physicians defend themselves by alleging the extreme difficulty of making an early and trustworthy diagnosis, and it cannot be denied that these cases do sometimes present well-nigh insuperable obstacles to a correct diagnosis. If we await incontrovertible evidence of the localization of the disease in the region of the pylorus it will in the majority of instances be too late for effectual surgical intervention. It is open to question, too, whether further experience will enable us to surmount this difficulty, which appears to be inherent to the anatomical circumstances. The only alternative is to cut the Gordian knot by having early recourse to an exploratory incision in all cases presenting the classic symptoms occurring in patients at what we may call the cancerous age. Special importance is attached, in the diagnosis of cancer, to the absence of hydrochloric acid in the gastric contents.

In the discussion on a paper read at a recent meeting of the Clinical Society of London by Dr. Moynihan, it was pointed out that in seventy per cent of the cases of gastric cancer the growth is so situated as to allow of its extirpation, and further, there is a curious absence of secondary growths in the liver. The present attitude of surgeons toward operations for cancer of the stomach, as was pointed out, is very much that which they took twenty years ago toward removal of the breast for cancer. Little by little the scope of the operation was enlarged so as to include the lymphatic area, with proportionally more favorable results. No doubt in the near future they will follow these lines in dealing with cancer of the stomach, removing lymphatics and other possible sources of recurrence, and thus advancing toward the object which they have in view—the radical cure.

PHOTOTHERAPY.

The *Boston Medical and Surgical Journal* of December 12, 1901, says editorially that one of the most promising signs in the

progress of medicine is the growing tendency to take advantage of what may be called natural methods of treatment. We have finally, after too many years of waiting, come to appreciate at their true worth such commonplace agents as air and water and heat. Now, in addition to these, light is apparently coming in for its share of recognition, not merely as a desirable adjunct in the treatment of various affections, but as a scientifically applied means of alleviation of certain conditions.

The attention which has of late been given the general subject of treatment by light, or phototherapy, has been due largely to the work of Professor Niels R. Finsen, of Copenhagen, whose recent papers have been lately translated into English. In Denmark researches on the influence of light have been prosecuted for years, by the aid of a public institution supported by the State. This institute was founded in 1896, with the object of encouraging scientific research on the action of light on living organisms, and especially of applying the results to the purposes of practical medicine. The building contains laboratories and a clinic for phototherapy, with reference particularly to the treatment of lupus and other diseases of the skin by concentrated chemical light. The work undertaken by Finsen has an added interest for us at the present time, because of the reputed successful treatment of certain stages of smallpox by light. As long ago as 1893 Finsen recommended placing smallpox patients in rooms from which the chemical rays, ultra-violet and violet, were excluded by the interposition of red glass or red cloth. The result of this simple treatment was that the vesicles as a rule did not suppurate, and that the patients recovered without scars, or at most with extremely slight scarring. Finsen has met with uniform success in his treatment of smallpox, basing his theory on the principle that the erythemas in general are diminished in intensity when the chemical rays of the spectrum, especially those of the ultra-violet, are excluded. He claims that the effect of the treatment is to prevent the suppuration of the vesicles, which gives rise to the most dangerous element in the disease and also to the later pitting of the skin.

The conditions to which attention should be given to attain favorable results are as follows: (1) Exclusion of chemical rays must be absolute. The thickness of the red material used to filter the light depends upon its nature; if paper or thin cotton material be employed, four or five layers will be sufficient; if rather thick flannel be used, two or three layers will suffice. It is more convenient to use red glass, but in that case the glass must be very dark. For artificial illumination, electric or other bright light should not be employed. (2) The treatment should be continued without the slightest interruption until the vesicles have dried up; even a short exposure to daylight may lead to suppuration with its sequels. (3) The treatment must be begun as soon as possible after the appearance of the rash; the nearer a patient is to the suppurative period, the less chance there is of good result. The success which has from time to time been attributed to the use of various applications to the eruption, Finsen claims, is due not to any specific action of the drug employed, but simply to the more or less complete exclusion of the light.

The treatment of lupus vulgaris by concentrated chemical rays is based upon the fact that light produces a powerful bactericidal influence, a quality which depends upon the most refrangible rays of the spectrum—the ultra-violet, violet, and blue. Hence it is well known to accentuate these by means of lenses and mirrors, and, so far as possible, to exclude the heat rays—the ultra-red, red, and yellow. The sun is naturally the best source of light, but not being always available, it is frequently necessary to use electric light. It has been shown that the presence of blood in the tissues prevents the penetration of the chemical rays to a remarkable degree. It is therefore well to exclude the blood, as far as possible, from the region to be submitted to the action of the light. In the treatment of lupus, care should always be taken to begin at the margin of a patch of the disease. After the light treatment is once begun, it is said to be rare that the eruption increases. The greatest drawback to the procedure is its necessary slowness. Whatever future developments research in this line may have in store for us, it is evident that work already done is of sufficient importance to excite our warmest interest. Its rationality appeals to us, and it remains only

for a much more general test of its usefulness to be made than has hitherto been done.

THE EFFECT OF ALCOHOL ON DIGESTION.

In the *New Orleans Medical Journal* for December, 1901, STORCK gives us the results of an experimental research.

It was found that alcohol, when present to the extent of five per cent, retarded digestion, as did also whiskey and brandy. Judging by the author's experiments, wines have a marked inhibitory action on pancreatic digestion.

He believes with Roberts that, considering how rapidly alcohol is absorbed from the stomach, it is almost impossible, as used dietetically, that the chyme in the duodenum should ever contain anything like five per cent of alcohol.

Storck concludes with the following remarks:

1. That laboratory experiments on digestion bear a more or less close resemblance to each other. The experiments conducted outside of the human body were closely patterned after the work of Roberts, Chittenden, Mendel, and Hare; the experiments on the human subject were carried out on what he considers practical lines.

2. Small quantities of alcohol favor salivary and gastric digestion; large quantities inhibit salivary, gastric, and pancreatic digestion.

3. Alcohol, whiskey, gin, and brandy are less harmful to the digestive processes than are malt liquors and wines.

4. The continuous use of alcohol, even in small amounts, is liable to prove detrimental to the digestive process.

5. In persons of weak digestion, alcohol as a rule is harmful, unless given well diluted.

6. Strong alcoholics should never be given when the stomach is free of food.

7. Alcohol is a valuable food in disease; requiring no primary assimilation, it yields force rapidly to an exhausted system, and in small quantities it promotes the appetite.

8. It is well to bear in mind that the purer the whiskey or the brandy, the less liable it is to produce digestive disturbances. According to Dujardin-Beaumetz, the toxic effects of the alcohols increase with the sum of their atomic weights, with the exception of the highest and lowest.

9. Finally, it is true as Wood says: "Science in no way contradicts the experience of every *bon-vivant* that the small doses of alcohol increase, and larger amounts interfere with, the activity of digestion."

SOME OBSERVATIONS BEARING ON THE TREATMENT AND MANAGEMENT OF ADVANCED CASES OF CONSUMPTION.

In the *Intercolonial Medical Journal* of October 20, 1901, ZWAR expresses his views as to this subject as follows:

Dealing first with cough, frequently one of the most troublesome symptoms, it is most gratifying to find the effect of the open-air treatment in diminishing or completely removing the useless, irritating, unaccompanied by expectoration, part of the cough; whilst frequently the cough is further diminished owing to a lessening of the secretion and expectoration. In all cases it is lessened and becomes much less harassing, and that more especially in the night cough so frequently disturbing the patient's sleep, and making him miserable for the following day; and further, in that very distressing cough ending in retching and vomiting with but little success; while, on the other hand, it has been found to rapidly improve and completely disappear on strict enforcement of open-air treatment.

Coming to the use of drugs for the relief of cough, one is very much impressed with the importance of doing without morphine in any shape or form as long as possible. If used solely for the relief of cough, it is wonderful how quickly its effect seems to pass away, the marked way it detrimentally affects digestion, and the depressing effect that follows its too frequent use. If used at all, it seems advisable only to employ it for very short periods at a time, and to judiciously interchange it with other cough sedatives, as the acids and sedative inhalations, etc. In a patient not already accustomed to their use, one finds an acid linctus valuable, and one containing fairly large doses of nitromuriatic acid seems specially useful, judiciously alternated with

inhalations, which are quite sufficient, especially in an open-air case.

Of the inhalations, one containing menthol and eucalyptol, of each one drachm, to two ounces of spirits vini rectificati, and a teaspoonful of this added to a pint of water at 150° F., is especially useful; acid carbolic, creosote, or other bases, can be added to this as special occasions demand.

In those cases in which morphine in some form or other has been tried, the uniformly best results have been obtained from heroin hydrochlor. gr. 1-20 and phosphate of codeine, given in the form of syrups, though individual peculiarities seem to play a good part in their efficacy. Nevertheless, heroin and codeine give the uniformly best results, both with regard to their sedative effects, and also in that they produce fewer ill effects than other preparations of morphine. The other preparations of morphine, also, seem most effective when given in the form of fluids, as the linctus. All preparations, however, seem to lose their effect if used for any length of time, and require frequent and judicious changing.

Very little satisfaction has been obtained from the various sedative powders recommended by some persons, all of which contain sugar and mistura glycyrrhiza composita as their vehicle, and preparations of morphine, phenacetine, ammonium chloride, or any necessary combination of these as their basis, according, respectively, as a sedative, antipyretic, stimulant expectorant, or any necessary combination of effects is required. The action of the various bases has been found less satisfactory given in this form than when given in fluid form.

With regard to the question of sleep, digestion, etc., the observations made with regard to the beneficial effect of fresh air on the cough are, if anything, more forcibly brought before us. The patient treated in the open air rarely requires a soporific, and the sleep obtained is sounder, less disturbed by coughing, than that obtained by means of soporifics, in a case treated in the ordinary way.

With regard to digestion, mention has already been made of the good effect in those cases where retching and actual vomiting is produced by coughing. Digestion, on the whole, is improved in all cases, and rarely requires drug treatment. One is frequently struck by the very small amount of digestive disturbance that apparently exists in a consumptive patient running a maximum temperature of 103° or more.

Another point the writer has been most forcibly impressed with is the way open-air treatment seems to prolong the life of the apparently dying patients, a question which may at times be of exceedingly great importance. Thus, quite recently, we had under our care a boy of sixteen who had extensive disease of both lungs, and who was apparently near dying, his pulse being generally uncountable, and never below 150, and his respirations between 50 and 60, and who became cyanosed on the very slightest exertion; and yet, with plenty of fresh air, he lasted for several months.

THE USE OF HYDROBROMATE OF HYOSCINE IN THE TREATMENT OF CHOREA.

In the *Pennsylvania Medical Journal* for November, 1901, EWING commends this plan of treatment, but states that thus far he has not been able to find any literature on the subject of hyoscine in chorea, and can point to no cases in which it has been used other than the ones reported here.

The first case in which it was employed was by far the most severe case of chorea in the author's experience.

In June, 1900, in consultation with Dr. Alexander, he saw A. B., inmate of Pennsylvania Reform School, aged eighteen, a bricklayer by occupation. The patient was of average size and development; well nourished; temperature slightly subnormal; tongue moist and coated with brownish fur; respiration slow and regular. Sickness extended over a period of three days and developed very rapidly. First attack as far as known.

No cause could be assigned, and the patient was working and apparently in good health up to the time he was suddenly taken sick.

The patient was unable to stand and was protected from injuring himself while in bed by mattresses placed on each side. Constant involuntary movements in arms, legs, and at times in muscles of the trunk, were present. The muscles of the face were involved synchronously with either arm, and the movements followed each other in rapid succession.

Urine and feces were passed involuntarily. The patient was unable to swallow

any solids and liquids. Arsenic had been used with no apparent result.

The following treatment was adopted: Liquor potassii arsenitis 8 minims three times a day, increasing one minim daily. until puffiness under the eyes appeared. Hydrobromate of hyoscine gr. 1-100 was injected morning and afternoon. At bedtime, chloral and ammonium bromide of each gr. xx were given. The patient was fed regularly every four hours with milk and eggs through the stomach tube.

At the end of five days involuntary movements had ceased, and the patient was able to stand erect and move about.

Hyoscine, chloral, and bromide were discontinued, being no longer needed. After the lapse of four or five days more the arsenic was dropped on account of puffiness under the eyes, and tonic doses of quinine and iron given for a short time, when the patient was able to go to work again.

During the last year the author has used the hydrobromate of hyoscine in twenty more or less severe cases of chorea, and only with the most favorable results.

In some of the cases no direct cause of the attack could be given, while a good percentage could be directly traced to fright. All were under twenty years of age, and with one exception poorly nourished.

The case reported here in full was the most severe, yet the milder ones seemed to yield equally well.

It has generally been the author's custom to use the hyoscine in conjunction with Fowler's solution, yet in several of the cases he has used the hyoscine alone after having given arsenic for a more or less extended period with no apparent good result.

The dose of hyoscine used in the several cases varied from 1-200 to 1-50 grain, according to the age and severity of the attack.

Another fact noted both in the maniacal excitement and chorea, and for which no reason can be given, is that in some cases the hyoscine when given by the mouth has no effect, yet when administered hypodermically acts very promptly, and this when the digestive functions seem to be normal.

Up to the present time none of the cases treated have had a second attack as far as has been learned.

THE TREATMENT OF PLACENTA PREVIA.

HIGGINS gives the following advice in the *Boston Medical and Surgical Journal* of January 2, 1902. He thinks that the rational treatment of placenta previa depends more or less upon the circumstances arising in each case.

Every patient, after the appearance of the first hemorrhage, and the diagnosis is established, should be put absolutely at rest and kept under most careful supervision, with every provision at hand ready for immediate interference. The first hemorrhage is practically never fatal, but a dangerous one may arise at any time without warning. Before the fetus is viable, or nearly so, unless the patient can be transferred to a hospital or surrounded by proper safeguards in her own house, induction of miscarriage is the only safe method of treatment, and is practically without mortality to the mother if properly performed. After the viable period is reached, in the interest of the child it is advisable to defer delivery as long as possible with safety to the mother, but only when she can be at rest and carefully watched. Any other methods of procedure entail grave danger to both lives, and involve the physician with anxieties and risks which he himself should be unwilling to assume.

An important point to always keep in mind in deciding upon the methods of treatment is that if hemorrhage does begin early, it is rarely possible, even under the most favorable auspices, to prolong the pregnancy for any great length of time; a few weeks at best can only be secured. Miscarriage and hemorrhage may begin even while the patient is sleeping quietly.

The only safe way is to terminate pregnancy as soon as the diagnosis is established after the end of the seventh month, as after this time a hemorrhage may occur without warning, severe enough to cause ultimate death. After delivery is decided upon, if the patient's condition is in any way precarious from previous hemorrhage, and the bleeding continues, the membranes should be ruptured, and with the woman in Sims's position the vagina should be tightly packed with pieces of dry, baked gauze, which if well applied controls hemorrhage by pressure and by the styptic action of the dry gauze. The patient is then kept under careful observation, and brought

into better condition by stimulants and saline infusions. The gauze will efficiently control hemorrhage for from four to six hours, and may safely be left in that length of time unless it soaks through before. The packing is of no value unless firmly applied. Under its use dilatation goes on with labor and practically without hemorrhage, the cervix being compressed between the packing and the presenting part. If the packing method was faithfully followed in every case as a routine measure, many cases which now bleed during dilatation till their condition becomes serious would be kept in good condition for their subsequent operative delivery. Moreover, after removal of the gauze, the head, if presenting, not infrequently is found to be engaged, and normal labor or an easy forceps operation results.

The other expedient is bipolar version by the Braxton Hicks method, the os being dilated sufficiently to admit two fingers, which are passed into the uterus, seizing a foot and extracting it until the knee appears outside the vulva. Moderate traction on this leg brings the breech against the placenta, controls the hemorrhage, and hastens dilatation, and extraction becomes safe usually after an hour or so.

It is clearly demonstrated, on study of the conditions, that under modern methods of treatment and reasonable aseptic precautions, which it should be scarcely necessary now to mention, the mortality from placenta previa is not over ten per cent in general, and under favorable circumstances, in skilful hands, it is below five per cent; that abdominal section is rarely ever indicated; that it does not even in favorable cases hold out promise of better than ten per cent mortality; that its risks are much greater, and in unfavorable cases its mortality is prohibitive.

The only cases of placenta previa in which Cæsarian section is ever justified are those at full term, with complete previa, with a rigid os, and seen before the occurrence of any severe or dangerous hemorrhage, and with the mother and fetus in good condition. Such cases would offer the best opportunities and conditions for the recovery of both mother and child, would allow sufficient time for thorough preparation, and would perhaps be justified; and, in the hands of experienced operators, the mortality would be low.

ICHTHYOL IN TUBERCULOSIS.

In the *Proceedings of the Philadelphia County Medical Society* for December, 1901, SPANGLER states that ichthyol possesses a wide range of therapeutic utility by reason of the innocuous form of sulphur contained in its composition. It is acceptable to the stomach, promoting its function, is readily absorbed by the alimentary mucosæ, and when administered in quantity is in turn eliminated by the mucous surfaces in general. In the tissues it possesses, to a high degree, the property of stimulating that function of protoplasmic life concerned in constructive metabolism, resulting in an increase in bodily weight, and aside from the local impression exerted through the process of elimination, accomplishes its chief curative value in tubercular and other forms of wasting disease through this reconstructive property.

The chief objection to its use is the odor, taste, and eructations, which are neutralized to a considerable extent by the use of capsules. In deference to the objectionable features the writer several years ago abandoned the custom in vogue of administering the solution in ascending doses, reserving this method for the variety of cases in which the upper air-passages are involved, for the purpose of securing the impression from contact in the act of deglutition.

The plan most generally acceptable has been to begin with a No. 1 empty capsule (filled by the patient) after each meal for the first week, adding another to each dose during the second, and a third to each dose the third week. This dosage is maintained indefinitely, and presents the advantage of attaining the maximum degree of tolerance in the shortest time.

If discomfort arises from the eructations the interval between each dose is apportioned to afford ample time for complete appropriation before another is introduced. This is provided for by giving the capsules after breakfast and at bed-hour. Each individual temperament throughout the treatment suggests or determines the most appropriate and effective arrangement of the dosage, and the ability to prolong the treatment indefinitely is dependent upon the delicacy of this adjustment. For in the application of ichthyol, as of any other remedy, a greater degree of harmony can be maintained by having an elastic mode of administration, rather than an inflexible method or technique, and endeavor to com-

pel the varied temperaments to conform to it.

During the first week of the treatment little or no appreciable effect is noticeable in the chest symptoms; after that time, however, a gradual impression becomes manifest. The cough paroxysms lessen in intensity and frequency, the expectoration becomes more profuse, and the sputum loses a measure of the density. Proportionately to the amelioration of local symptoms the appetite improves, and there is usually a marked weekly gain in weight.

Notwithstanding its exceptional service in the chronic forms of the disease, experience proves it of little value in the acute complications. If, at any time, the progress of the improvement is interrupted by the intervention of a pleuritic or pneumonic attack, which, unfortunately, too frequently occurs in this latitude, the ichthyol is suspended until the acute symptoms subside, when it is again resumed. During the early months strychnine in supporting doses has proven a valuable adjunct to the treatment of many cases.

Considering its availability from the viewpoint of existing conditions, climatic treatment is a luxury only attainable by a small percentage of cases, and until sanatoria are provided by legislation or private philanthropy to accommodate the poorer patients in our communities, who by their environment contribute a daily quota to an already congested volume, any improvement in the condition of this class is dependent upon the benevolent inclination of the physician. It is suggested, therefore, that all cases of obstinate cough or persistent irritation of the upper air-passages, particularly when following an attack of grippe, pneumonia, or typhoid fever, be placed upon ichthyol and appropriate habit discipline.

EXOPHTHALMIC GOITRE; ITS TREATMENT.

In writing on this theme in the *Buffalo Medical Journal* for December, 1901, CASEY WOOD says that he has had no experience of the operative procedures recently advised —complete and partial thyroidectomy, sympathectomy, and injections into the substance of the thyroid. We have the testimony, especially, of Kocher and Stokes, in favor of the first named. All things considered, removal of one or more cervical ganglia seems to be the most desirable of the operative procedures, as prescribed by Jonnesco and his following. Intraglandular medication is, of course, not new except as to the medicaments employed. The last heard of is the injection of bile.

It is always to be remembered that medical treatment alone has sufficed to cure the disease. Brilliant results have been obtained by such different remedies that one is inclined to believe in the self-limitation of a certain class of goitres. They tend to get well, if left alone long enough. Electricity, mineral waters, hydrotherapy, large doses of sodic salicylate, belladonna, digitalis, ergotin, amyl nitrite, the writer has prescribed at various times, and all with some benefit. It is strongly suggested that these patients live as quiet a life as possible, that they have plain, non-stimulating food, and that they be induced to take as much sleep as possible.

The difficulties encountered in treating severe cases of Basedow's disease are exemplified in a recent article by Tornatola (*Archivio di Ottalmologia,* May-June, 1901). He was called upon to prescribe for a woman with fully developed Graves's disease, in which the exophthalmus was very pronounced, 1.5 centimeters in the right and 1 centimeter in the left eye. An ulcer occupied the two lower quadrants and two-thirds of the thickness of the right cornea. The lids covered only about one-third of the globe. In the left eye there was a smaller ulcer in the center of the lower quadrant. Corneas retained their sensitiveness. After the usual disinfection, the lids were sutured in such a way that the knots could be readily untied for appropriate treatment. In eight days the left ulcer healed, the right one in fifteen days. A month later she returned with a second corneal infection in both eyes, to be again cured. A third time the patient appeared with spreading ulcer in either eye, but on this occasion the lids could not be sutured over the globes, chiefly because the scarred skin of the lids no longer retained the threads and knots. Tarsorrhaphy was done, but the adhesions soon gave way. Sympathectomy was then performed by Professor Solomoni with considerable relief to the exophthalmus and the goitre; the tachycardia remained. Meantime the corneal ulceration, infiltration, and conjunctival chemosis increased until the left eye had to be exenterated. Tornatola now endeavored to preserve some vision in the remaining eye,

and succeeded by supplementing a second tarsorrhaphy with large skin grafts from the nose and temples until the interpalpebral aperture was finally closed. The patient's condition a year after was fairly satisfactory. Photographs and measurements show a reduction of the exophthalmus about one-half; the thyroid is "slightly reduced," and the general health decidedly better.

On the whole J. C. Da Costa's advice with regard to excision of the thyroid is most seasonable: "If medical treatment fails and the symptoms are urgent, consider the advisability of partial thyroidectomy, unless the goitre is very large or extremely small or the patient is very hysterical. Removal of a very large goitre is extremely dangerous and will not bring about a cure. If the thyroid gland is but little enlarged it is not necessary to remove it. In severe hysteria the operation is often useless. Never promise a cure, and always set forth the danger of the operation."

TREATMENT OF LOBAR PNEUMONIA,

STOCKTON, of Buffalo, says in the *Medical News* of December 28, 1901, that there can be little doubt about the almost universal need of the preliminary calomel purge in this disease. Enough should be given to promptly empty the alimentary tract and to increase the activity of the liver and kidneys. The internal congestion can be still further relieved by the occasional use of magnesium or sodium sulphate, both for diuretic and purgative effects. There is a general agreement as to the importance of the treatment of the skin, although we differ in our methods. In the Buffalo General Hospital he almost invariably employs the hot mustard foot-bath, followed by sponging. He has a particular way of giving the bath, and repeats it every two to six hours, according to the indications. The object is not only to promote diaphoresis, but to stimulate the cutaneous circulation, and thereby increase the efficiency of the heart. When the bath is given with sufficient care it fatigues the patient but little, and is usually followed by considerable, and sometimes very marked, relief of symptoms. All are agreed that the general circulation demands attention. High blood-pressure and an exaggerated heart action are likely to do harm; they foreshadow a great pulmonary congestion and consolidation and irritate the brain. The realization of this formerly led to the use of antimony, veratrum viride, and other depressants, now mostly out of vogue. We usually find ourselves able to manage excessive circulatory activity by the purge and the foot-bath. The depressant drug is rarely needed, though by this is not meant that it is absolutely and invariably to be excluded. It is sometimes wise to employ cold compresses or ice bladders over the chest, and, where the temperature is excessive, great benefit has followed the cold bath after the manner of the Brand treatment in typhoid fever.

What one fears more than excessive circulation is depression of the heart or lowering of the blood-pressure and adynamia, the approach of which always causes uneasiness. The best way to manage this tendency is, so far as possible, to prevent its appearance. This doctrine is not new, and it is the basis of various forms of treatment that from time to time have been highly lauded as being applicable to most cases. For instance, there was the treatment by alcohol or quinine in full and oft-repeated doses, the giving of ammonium salts *ad nauseam*, the administration of digitalis in heroic doses; all of which methods still have their advocates, and yet to-day these are for the most part abandoned. Of course, each of these measures has its place, and there is an occasional hour and an occasional case when one of these remedies meets the indications peculiarly well; but, according to the author's experience, the only drug upon which we can place any reliance is strychnine, given hypodermically and in full doses. In many private and in most hospital cases it is necessary to begin the use of strychnine early, and the only limit to the dose is the sought-for physiological effect of the drug. Beginning with 1-30 of a grain, this is repeated every two to four hours, and increased to 1-20, 1-15, or even 1-10 of a grain, if the condition of the circulation demand it.

At a certain point in pneumonia to allow the heart to fail is to invite, nay, to secure, rapid pulmonary congestion and edema, with an early fatal termination of the case. To avoid this result we must use strychnine freely. It has often been found necessary to give minute doses of opium to counteract the irritation that the strychnine causes to the nervous system. The unpleasant effects of strychnine can thus be overcome

without in any way endangering the patient from the effect of opium through depression of the respiratory center. In these larger doses strychnine is also of use in assisting elimination; the purgatives and diuretics thus become more effectual. As to the nervous system, it should be guarded by allowing the patient every possible opportunity of rest. The baths, the nourishment, the medication, should as much as possible be administered at about the same time, so that there may be the longest practical interval for composure. Sleep may be favored by the ice-bag to the head and by the chloralamid or Dover's powder. As a rule, the patient should not be wakened for any purpose; but if he sleeps beyond the expected hour, the nurse should be ready the moment he awakes to prevent depression, restlessness, and discouragement, by the prompt administration of nourishment, strychnine, and if necessary other stimulants. This is a practical point which seems to be of considerable importance.

ANESTHESIA OF THE MEMBRANA TYMPANI.

In the *Journal of the American Medical Association* of December 28, 1901, ELLETT recommends the following plan of treatment:

The mixture he uses is composed of equal parts of cocaine hydrochlorate, menthol, and carbolic acid. The substances combine to form a slightly turbid liquid of a thin syrupy consistence, permitting its application with a cotton-tipped applicator. If this application is made with due gentleness there is no difficulty in using it on the drum even in little children. The canal should be first rendered aseptic with a warm bichloride solution, which serves the additional purpose of removing particles of cerumen, desquamated epithelium, etc., which might obstruct the view of the deeper parts. After thoroughly drying the canal with a cotton-wrapped applicator, the anesthetic mixture is applied on another applicator similarly prepared with a very small amount of cotton, so that its contact with the drum can be watched and made to a small area. The author usually makes two or three applications to the posterior portion of the drum where the incision is to be made. There is a slight whitening of the parts touched, just enough to enable one to tell the extent of the anesthetized area. In a minute or two the drum is completely anesthetized, and can be incised without pain. The author has used the method a good many times on both inflamed and uninflamed drums, and in not one instance has it failed. Adults have frequently assured him that they felt no pain, and as frequently he has performed the operation in children without their ever knowing that anything had been done except the introduction of an applicator. Sometimes in nervous children who will not permit you to touch the aching ear it is necessary to give a general anesthetic, but this is on account of nervousness and not pain.

This mixture is certainly not so caustic as pure carbolic acid, while probably more anesthetic, and it is believed that the carbolic acid is the most active ingredient and cocaine the least active, judging from the action of these drugs under other forms in this locality. Dr. Ellett believes in the total absence of effect produced by cocaine alone on the drum.

THE TRUE VALUE OF LOCAL TREATMENT IN GYNECIC PRACTICE.

In *American Medicine* of January 11, 1902, HAMMOND tells us that the various methods of local treatment are by the use of (1) the tampon, (2) antiseptic and astringent applications, (3) vaginal douching, (4) high rectal injections, (5) pelvic massage, (6) local bloodletting, and (7) the pessary.

1. The vaginal tampon. The materials that may be used for tamponing are absorbent cotton, sterilized gauze, and sterilized lamb's wool. The best material is sterilized lamb's wool covered with a layer of absorbent cotton: because it is nonirritating, its draining properties are good, it is introduced and removed with little or no difficulty, and it retains its resiliency, even when wet, longer than any other material. When this tampon is employed, the cotton becomes saturated with the medicament, "while the nucleus of wool within gives the required degree of elasticity or resiliency, and serves also as a perfect medium for drainage." Never introduce a dry tampon, as it will invariably irritate the mucous membrane; this may be obviated by covering the tampon with boracic acid.

Tampons are used to apply medicaments, and for mechanical reasons. The medicament may be applied for the relief of pain, absorption of inflammatory products, as a

counter-irritant, or to contract relaxed tissues. Glycerin, owing to its dehydrating properties, is the best adjuvant to other drugs, and when combined with ichthyol, 15 to 25 per cent, its value will be markedly enhanced. Boroglycerin will be found very useful in some cases. The combination of ichthyol and lanolin forms a very disagreeable ointment to handle, hence a preference for the glycerin mixture. Very often the mechanical effect of the tampon, by supporting the uterus, maintaining it in its normal position, relieves the congestion and pressure symptoms.

It is important to explain to the patient that a tampon has been inserted, as it is possible that she may not return for a second treatment, and the packing, undergoing putrefaction, may produce sepsis. Beckwith reports the case of a woman in whom a tampon had remained for twenty-nine years, it having been introduced by a midwife without the knowledge of the patient. The tampon in this case had become incrusted with lime salts, which gave rise to hemorrhage from the excoriated vaginal mucous membrane.

2. The antiseptic and astringent applications of value are numerous. Churchill's tincture of iodine may be applied to the cervix and vaginal vault with advantage. In eroded os uteri, a ten-per-cent solution of nitrate of silver, or a five-per-cent solution of sulphate of copper, is indicated; acetic acid, to which four-per-cent carbolic acid has been added, may be poured into the speculum and allowed to act for several minutes, this procedure being repeated daily for a few weeks. The reddened ulcerated patches gradually disappear as the pathologic cylindric epithelium is replaced by epidermoid cells.

3. The vaginal douche may be of hot water or of hot antiseptic solutions. If the chief aim of the injection is to combat inflammation and cause absorption of inflammatory exudates, plain hot water is the best, the temperature of which should be at least 110° F. At least one gallon should be used at each treatment. The douche must be prolonged, in order to secure its secondary contractile effect upon the blood-vessels. Occasionally hot water increases the pain and may be replaced by lukewarm water. Vaginal douches in chronic cases are used, as a rule, night and morning; a fountain syringe is preferable, and the patient should be in the recumbent posture on a douche pan. For antiseptic douching, bichloride of mercury 1:4000, creolin, lysol, permanganate of potassium, and carbolic acid, are of value.

4. High rectal injections are useful, because the fluid is carried higher in the pelvis and exerts its influence on the intrapelvic structures more effectually than do simple vaginal douches. It also tends to relieve constipation, which is so frequently present in these cases of pelvic disease.

5. Pelvic massage, so earnestly advocated by Thure, Brandt, and others, has not proven satisfactory. Patients are unwilling to submit to the frequent and prolonged manipulations necessary to secure success by this method.

6. When the cervix is enlarged and congested, relief may be given by multiple punctures made under antiseptic precautions and the abstraction of a few drachms of blood. The depleting effect of such "surgical leeching" is decidedly beneficial.

7. In these days of multiple operations and brilliant surgery the pessary has fallen into disuse. It has been abused because improperly used. It has a definite place in the armamentarium of the physician. The function of this instrument is to maintain the replaced uterus in its proper position by a pulley-like action on the vaginal walls. It must be carefully fitted to the individual case, as any haphazard introduction will give rise to more discomfort than relief. The uterus must first be replaced into its normal position; if this is impossible, the pessary is contraindicated. It is just as unsurgical to introduce a pessary when the uterus is in a malposition, as it would be to apply a truss to an unreduced hernia.

The selection of the pessary will depend upon the malposition of the uterus. The use of intra-uterine pessaries should be unqualifiedly condemned. Montgomery calls attention to the fact that it is extremely important to induce the patient to realize that astringent injections should be avoided while the pessary is *in situ*, as they lead to the deposition of salts upon the pessary, which roughens its surface, increases the irritation, and leads to further abrasion and ulceration of the vagina. Patients wearing a pessary should frequently use a cleansing douche, and should be kept under observation.

One difficulty in the employment of this instrument is that frequently extensive lacerations of the pelvic floor are present,

and the pessary cannot be retained in the vagina, being either extruded or displaced if the patient makes a straining effort. These patients should then pass from the domain of palliative treatment to that of surgical procedures. Bandler, of New York, believes that the results which he has obtained with thermal carbonated saline baths (which may be used in conjunction with local methods) justify him in claiming for these baths a power of resorption too valuable to be underestimated, and they constitute a treatment which at the same time benefits the general condition to a decided degree.

It is clearly evident that a number of patients may obtain considerable relief by the use of these various local methods, when more radical procedures are inadvisable or impossible.

THE TREATMENT OF CHRONIC GASTRIC CATARRH.

EWALD gives the following directions as to treatment in the *International Medical Magazine* for December, 1901. In regard to lavage he thinks that while the washing out removes the causes of fermentation, at least for the most part, it limits also the production of new fermentations. We may assist this action by the simultaneous administration of internal antiseptics. For this purpose the author employs exclusively resorcin, and in preference the resublimated preparation. This is given in combination with the salicylate of bismuth, so that a powder made up about as follows is ordered:

℞ Resorcin resublimati, 5.0;
Bismuthi salicylat., 10.0;
Sodii bicarbonat., 15.0;
Sacchari albi, 15.0;

M. Sig.: Take a small teaspoonful every two hours.

This powder has the advantage that it can be taken without hesitation with the condurango decoction, etc.

INCISIONS MADE IN LEGS FOR EDEMA.

In an article in the *Bristol Medico-Chirurgical Journal* for December, 1901, STACK tells us that this proceeding is not so commonly employed as it used to be. It is most generally of use in heart cases, and is often of great benefit. In several cases in which paracentesis of the abdomen had been performed—and this was done at the same time or later—it seemed to have a much more beneficial effect than letting the fluid out of the peritoneal cavity. This may be because the fluid is let out of the tissues, and so continues to relieve the circulation; while the abdominal fluid has, so to speak, lost its direct contact with the blood stream. As it continues to flow for some time, it is a more constant relief than tapping the abdomen. The best method is to make one three-inch incision into each limb on the inner side near the ankle, and keep it if possible from suppurating, as this quickly terminates the flow. It is not painful, but the constant flow into the dressings is a nuisance, and sometimes cellulitis arises. Southey's tubes sometimes act very well instead; but they often become blocked up, and consequently are not so generally useful.

ON THE TREATMENT OF NERVOUS INDIGESTION OR GASTRIC NEURASTHENIA.

In the *Edinburgh Medical Journal* for January, 1902, HERSCHELL discusses this theme. As he well says, the first thing to do in any case is to make sure that the neurasthenia does not depend upon the absorption into the system of toxins from the alimentary tract. To this end we carefully examine the mouth for the presence of necrosing and septic stumps and for pyorrhea alveolaris. If either of these conditions be present, the patient must be sent to a dental surgeon for treatment, before the neurasthenia can be attacked with any hope of success. We examine the abdomen for retained fecal matter in the large intestine, and the urine for indican. The presence of the latter in abnormal quantities is now held to point to the possibility of toxin absorption from the bowel. If we find evidences of chronic fecal retention, we wash out the colon with a series of large injections. Having satisfied ourselves that no toxins are being absorbed, we make a careful exploration of the abdomen for gastroptosis or enteroptosis. If present, we apply a suitable bandage or belt.

Having arrived at this point, the question of diet will demand our attention.

Although, as we have seen, the study of the chemistry of the gastric secretion has very little positive value in the diagnosis of chronic neurasthenia, yet it is indispensable

if we wish to treat the case in a scientific manner.

The first problem to be decided is the frequency with which meals should be given. Shall we give the patient five or six small meals a day or two large ones? The answer to this will entirely depend upon the presence or absence of gastric myasthenia. Myasthenia or muscular weakness of the stomach wall may exist in three stages.

First stage: The stomach splashes more readily than normal during the digestive period, tonic contraction is deficient, but peristalsis is practically normal. The stomach manages to empty itself before the next meal.

Second stage: The stomach cannot empty itself before the next meal, but does so during the night, so that it is empty for a short time before breakfast.

Third stage or atonic dilatation: The stomach cannot empty itself during the night, and thus always contains food residues.

We ascertain the presence and degree of the affection by extracting the stomach contents, before dinner and before breakfast respectively. If we find no food residues before dinner, the affection is in the first stage. That is, of course, assuming that the other signs of myasthenia are present. If we find food residues before dinner, but not before breakfast on the following morning, we have to deal with the second stage. If the stomach contains stagnating food débris, when it ought to be empty, the first thing in the morning, then there is myasthénia of the third degree. In the treatment of neurasthenia pure and simple, small and frequent meals are indicated, as we know from clinical experience that the patients usually become exhausted and require food between the ordinary mealtimes. Also in myasthenia of the first and second degrees there are fortunately the same indications. The rapidity of digestion is not impaired, but the weakened stomach is unable to handle a large mass of food. So one may lay down the positive rule that in neurasthenia, complicated with myasthenia gastrica of the first or second degree, we should order the patient five or six meals, at intervals of two or three hours during his waking day. The best plan is to give three principal meals, and between them some lighter, more easily assimilable food, as plasmon and milk, or egg-flip. It will be very rare that we shall meet with a case of myasthenia of the third degree as a complication of neurasthenia. It is most common to find only the first degree without any marked delay in the peristalsis of the stomach. The diet of myasthenia of the third degree is a subject of too great a magnitude to be discussed in the limits of the present paper, complicated as it is with the question of lavage.

The object of our examination, then, is to exclude myasthenia retention. If we can do this we may safely give the frequent small meals which we know are, as a rule, best for neurasthenia.

The next point to ascertain is whether the food shall contain a preponderance of proteid or of farinaceous material. To this end we administer to the patient an Ewald test breakfast, examining the contents of the stomach one hour afterward. We need only examine for hydrochloric acid. We first of all test with blue litmus paper. If it does not redden we need proceed no further, as we shall have ascertained all that we require, namely, that there is no acid present of any kind. If, however, as will usually happen, we obtain the reaction, we had better proceed to test the free HCl at once with Gunsberg's test. As we have excluded the third stage of myasthenia, and we know that the stomach does not contain any fermenting food residues before breakfast, there cannot possibly be much lactic acid one hour after the Ewald test breakfast. Therefore any free acid present must be hydrochloric. We will suppose that we get the characteristic crimson reaction with the phloroglucin vanillin test, showing that free HCl is present. The next step is to ascertain its quantity. This we do with quite sufficient accuracy by titrating with a decinormal solution of sodium hydrate, using dimethyl-amido-azo-benzol as an indicator. Deducting the result from the total acidity, as determined with phenol-phthalein as an indicator, we get roughly the combined HCl.

If we find the hydrochloric acid is in excess we have several indications:

1. We must give a food which has a high combining value with hydrochloric acid. We must do this to protect the stomach from the irritating effects of the excess of acid. The pain of hyperchlorhydria is at once relieved by raw eggs or milk. But we must avoid giving such food as will excite the gastric glands to a fresh secretion of hydrochloric acid. We are therefore in

rather a dilemma, as recent experiments have shown us that the stomach is very sensible, and secretes a gastric juice absolutely fitted in quantity and quality for the particular work it has to do. For instance, if we introduce bread into a normal stomach, a gastric juice poor in HCl and admirably fitted to digest that article of food will be secreted. If, on the other hand, we put into the stomach a mutton chop, a gastric juice rich in pepsin and containing a relative excess of HCl will be at once poured out. So that if we give in a case of hyperchlorhydria a proteid diet, which has a high combining power for the free acid, we run the risk of stimulating a further secretion of the very substance we are attempting to neutralize. But under these circumstances we must do the best we can, and fortunately there are several foodstuffs which, whilst having a high combining value to HCl, yet stimulate the secretion of it much less than red butcher's meat. These are sweetbreads, calves' brains, oysters, albumen of eggs, plasmon, and milk.

2. We know that HCl in excess inhibits the digestion of starch, which was begun in the mouth by the ptyalin of the saliva. It is obvious that we must (*a*) limit the amount of starchy food; (*b*) convert as much of it as we can into dextrin—we toast our bread, and give converted starch, such as grape nuts or Mellin's food; (*c*) give with the starchy food a diastatic ferment, such as malt extract (choosing the liquid ones, such as bynim, taka-diastase, or infusion of malt, as recommended by Roberts).

If we find the hydrochloric acid normal or deficient we should prescribe such a diet as the following:

Breakfast: Cold boiled bacon, toast, one egg; toward the end of the meal, one small cup of cocoa. Fresh butter *ad libitum*.

Lunch: Any white meat, or fish or poultry, or bird; green vegetables in the form of a purée; stale bread or toast. One glass of water toward the end of the meal.

Tea-time: A cup of Mellin's food or a glass of milk and soda-water.

Dinner: Fish; butcher's meat, roast, grilled, or boiled, especially lamb, hare, tender beef and tripe; purée of vegetables; baked apples or stewed fruit, baked custard pudding; toast or bread. One glass of water toward the end of the meal.

If desired, a little spirit may be added to the water at lunch and dinner. The main point is to induce the patient to take a sufficient amount of easily digested fat, and to limit the amount of fluid taken with the meal. An hour before any meal the patient may take as much water as he likes to drink. No soup, entrees, or nuts, cheese, or pastry, are to be allowed.

In gastric neurasthenia all food of every kind will cause discomfort, and most patients will already have reduced their diet to far below that required for the needs of the organism, in the vain attempt to find a diet upon which they can live with comfort; and naturally, in doing so, they have increased the gastric trouble, as the stomach will participate in the general tissue starvation. It is well, therefore, to explain this to the patient, and put him at once upon a diet which is adequate to support life, and insist upon it being taken, however much discomfort it causes.

Medicine: After adjusting the diet, the first point to which we must direct our attention is the condition of the bowels. Constipation is the rule. We must remember that, in gastric neurasthenia, the most frequent cause of this condition is local spasm of the bowel. This is best treated, according to the method of Fleiner, with systematic injection of warm olive oil at bedtime. Small doses of cascara with hyoscyamus and taraxacum may be given at night, if spasms be present. The following pill is one of the best for habitual use as a laxative, when it is required to act gently upon the liver:

℞ Ext. col. co., 1½ grains;
Ext. rhei, 1½ grains;
Pil. hydrarg., 1 grain;
Pulv. ipecac, ½ grain;
Sapon. alb., ½ grain;
Ol. caryophyll., ½ minim.
M. Ft. pil. 1. To be taken at bedtime.

Undoubtedly the most valuable drug in the treatment of neurasthenia is nitrate of silver. It acts as an astringent, diminishes abnormal irritability of the nerves of the stomach, and is a tonic to the nervous system. It is best administered in the dose of one-fourth grain. One pill may be given three times a day, upon an empty stomach, for three weeks. It must then be discontinued for a time. Another valuable drug is quinine bisulphate, which is conveniently given dissolved in a teaspoonful of tincture of condurango, or in the form of a tablet. Not more than half a grain of quinine should be given for a dose. Red marrow of bones is also invaluable in the treatment

of gastric neurasthenia, and may be given in the form of glycerin extract.

With these exceptions, it is not believed that the drugs are of much use in gastric neurasthenia. Phosphates, glycerophosphates, phosphorus, zinc, bromides, have all practically failed in the author's hands, and, he believes, in those of most other physicians, to benefit permanently cases of true gastric neurasthenia.

SOME POINTS IN THE TREATMENT OF PERICARDITIS.

F. P. NORBURY states in the *Journal of the American Medical Association* of December 14, 1901, that these are his therapeutic views:

The etiologic factor is to be considered in the systemic treatment of pericarditis. In cases due to rheumatism it is especially important to give the salicylates. By so doing we are at least giving every assistance toward resolution, coming within the therapeutic possibilities of these drugs.

It is well to remember that nearly all cases of rheumatic pericarditis get well, if we will let them alone. Keep them at rest and carefully meet indications as they arise.

In regard to symptomatic treatment our therapy is to be directed more especially toward giving the patient comfort, relieving him from the distress of pain, promoting sleep, and being watchful of the little things which contribute so much to the success in internal medicine.

Pain is usually the most striking symptom calling for relief. Sometimes a blister over the pericardium will be sufficient, or if it continues, cold applications, cold cloths, or an ice-bag used as needed. The continued cold has proven of service to the writer, not only in relieving pain, but also in promoting resolution by seemingly arresting effusion. Hot applications may be suggested in these cases, where cold is not tolerated. The hot-water bag, when the dysphagia is not sufficient to require the patient to remain in a sitting posture, or the use of hot cloths, or dry heat in other forms as suggested by the needs of the case, will be of benefit.

Morphine may be given when these means fail, or for that matter it is good treatment to give it at once, if the symptoms are distressing. The writer has given it for several days at a time, guarding it with proper cardiac support.

The patient is usually restless, and if a man it is with more or less difficulty that we curb this feature, unless we use the bromides in moderation. The bromides are best given in the form of bromide of sodium. This should be given during the day, usually commencing about noon, again at four or six in the afternoon, and at bedtime. This is very frequently sufficient to quiet the patient, and usually promotes sleep at night.

Sleep is of great importance and should be watched carefully, as insomnia in one case of rheumatic origin became an alarming complication. Cerebral symptoms, with hallucinations and fear of death, were conspicuous. Under such circumstances trional is indicated. It will promote sleep, and does not interfere with the heart's action. In the case just mentioned the combination of trional with sulphonal was used; the former promotes sleep quickly, while the latter is slow in action, but its effects are prolonged.

The heart may need to be helped, especially if the action is labored or irregular. In this case strychnine may be given, or if further stimulation is necessary, digitalis with strophanthus. The writer has used digitalis and strophanthus in a diuretic menstruum, believing free diuresis will assist in relieving the laboring heart. It will also assist in relieving cardiac distress to flush the bowels with a free saline purgative.

To properly care for the effusion is one of the prime essentials of treatment. Caution in procedure is one of the lessons which the young men should learn, for meddlesome interference causes more trouble than completely ignoring the effusion as a factor in treatment. The tendency of the effusion is to be absorbed, hence we had better let it alone. Be watchful, and only interfere when the indications are pronounced.

If the effusion is moderate, unless septic, it will be absorbed, and even if large the chances are that with cautious use of diuretics and purgatives it will disappear. The writer has frequently noticed in cases of delayed absorption that if we give calomel in small doses repeated for a prolonged period, the effusion can be relieved. The same holds true in pleurisy.

If we have to deal with renal complications it is imperative that we be exceedingly cautious. Baginsky recommends the application of ichthyol ointment over the

pericardium, to facilitate absorption. He says that it is especially serviceable in children.

In this day of improved surgical technique paracentesis is more frequently resorted to, in order to relieve the burdened heart where effusion is extensive. The indications for interference are, according to Osler, "dyspnea, small, rapid pulse, dusky, anxious countenance," and, we will add, the physical signs of extensive effusion.

Gibson says: "The considerations which have to be borne in mind in connection with paracentesis pericardii are the determination of suitable cases, the selection of the most favorable site for operation, and the best method to be adopted." He recommends as the most suitable site the fifth intercostal space just inside the mammillary line.

The aspirator is recommended, but as these questions are largely surgical, it is preferable to have the surgeon assume the responsibilities in such cases. Even surgeons, however, do not agree as to the best means of operation, or the most favorable site.

Bretano maintains that tapping is dangerous, and holds there is no accurately determined and fixed space where the pericardial sac can be tapped without risk. He says the heart is lifted upward and forward against the chest wall by the effusion. He resects the fifth costal cartilage, punctures the pericardium, then incises, etc. He irrigates, in purulent cases, with a hot normal salt solution. "Where previous cardiac disease has existed operative interference is contraindicated," he says.

The surgical technique and mode of management of purulent cases, as before stated, are features wholly within the province of surgery, and as such are receiving notable attention. Ogle and Allingham prefer to enter the pericardial sac from below through the diaphragm, and give in detail the steps of the operation. Roberts, in 1899, compiled statistics of the cases treated by surgical means, and considering the gravity of such cases, the report shows encouraging results.

FUNCTIONAL HEADACHES.

In the *Fort Wayne Medical Journal-Magazine* for January, 1902, MORGAN asserts that drugs as curative agents for this disease are not very successful, although they may give relief. The coal-tar products, as antipyrin, acetanilid, and phenacetine, have gained some just credit for the relief afforded in this as in other pains. Nux vomica or its alkaloid, strychnine, should be given alternately with the coal-tar products, when the latter seem to be losing their effects.

Dr. Patrick prefers cannabis indica to all other drugs, claiming to have had wonderful results from it, his success depending, he says, on three factors—quality of preparation of the drug, difference in individual susceptibility, and substitution by druggists. Some preparations put on the market by reputable manufacturing pharmacists are worthless: one person may take many times as much of the drug as another. It is well to begin treatment with the minimum dose —say one or two drops of the fluid extract —and gradually increase until the physiological effects are noticed; then cut that dose in two and continue indefinitely.

The author states that he has had good results in only one out of three cases in which this treatment was tried, the other two showing an idiosyncrasy for the drug after the first dose and refusing to continue the treatment. In connection with this or any other treatment, great attention must be given to the general health, the best of hygiene, especially of the nervous system, should be insisted upon, and all abnormalities which may act as irritants removed.

ON THE TREATMENT OF HEART DISEASE.

In the *Postgraduate* for January, 1902, SATTERTHWAITE tells us that in his plan of treatment he uses digitalis only when special complications arise—as, for example, when he is confronted with urinary suppression, its attendants or sequelæ, and where prompt effects are not important. The more he sees of heart disease, the more he is convinced that digitalis is not only of uncertain composition, but unreliable, and therefore a dangerous remedy, especially if it is to be used indiscriminately. It may produce spasms of both heart and vessels. In fatty hearts he holds it to be particularly dangerous, and even in urinary suppression in our attempts to get its diuretic effect we may cause fatal cardiac contraction. But digitalis and its derivatives are slow, requiring some hours before their physiological action is obtained, so that we cannot

depend upon them in emergencies. If given as a diuretic it may be advantageously combined with 20 grains of bitartrate of potash and given at intervals of four hours. Digitoxin is now admitted generally to be more uncertain in action than digitalin, and the author avoids it. Merck's digitalin in his hands, however, has always proved satisfactory.

Digitalis, however, has a distinct field in mitral diseases where the pulse is irregular and where there is renal insufficiency with or without dropsy. It steadies the pulse, slows it, makes it firmer, and stimulates the capillary circulation, which is the ultimate object to be attained. Favorable action is heralded by increase in the urine. If it acts badly, the signs of warning are nausea or vomiting, a small and irregular pulse, embarrassed respiration, and diminution of the urine.

When a standardized preparation of digitalis cannot be obtained, it is best to use the powdered leaves in doses of two to five grains several times a day. A small number of persons can take digitalis with intermissions of long periods of time with benefit, but these cases are exceptional and do not disprove the rule. Strophanthus is in a measure a fair substitute for digitalis, though the two have somewhat dissimilar physiologic effects. As a heart compressor the author holds that strophanthus acts more powerfully and more promptly than digitalis, but as an arterial compressor it has less power. It slows the heart-beat, shortens systole, and lengthens diastole; but it is unlike digitalis in that it is apt to produce diarrhea and nervous irritability. In case digitalis fails, however, it may occasionally be found useful; but it is uncertain in its action. It is well to begin with small doses, say three minims of the tincture, gradually increasing them and noting the effect of the drug. It should not be long continued, however, and must always be administered cautiously.

Convallaria majalis, the lily-of-the-valley, also belongs to the digitalis group. It slows the heart and is a diuretic without cumulative action, but in small doses it is an emetic and purges actively like jalap or scammony. In mild forms of cardiac disease it has no place, but when cardiac stimulation with mild diuresis and catharsis is needed convallaria is applicable. There are comparatively few instances, however, in which it is indicated. The standardized drug should be used exclusively. In adonis, from the *Adonis vernalis,* we have a drug whose glucoside adonidin is allied to digitalis. It slows the pulse, increases its force, and is a diuretic without cumulative action. It is useless in functional disorders, but is a fair substitute for digitalis as a heart stimulant. The initial dose of three minims may be gradually increased. This drug, the adonis vernalis, is sometimes confounded, as it should not be, with the adonis estivalis, which appears to have no value as a heart stimulant and whose dose is three or four times that of the adonis vernalis. Too much reliance should not be put on caffeine, which is not always made from coffee—sometimes from ordinary tea, guarana, or the kola nut; the citrate, a favorite form, contains only fifty per cent of caffeine. Primarily caffeine produces cardiac contraction, leading up even to spasm and paralysis, in large doses and in some persons, with whom coffee is a poison. Secondarily, its effects are depressing, while it has proved an uncertain diuretic in the writer's hands.

Sparteine increases the blood-pressure, slowing the heart, but is unreliable. Its action is chiefly upon the heart muscle, and has been found to be a fairly good diuretic and heart stimulant in cardiac dropsy in doses of 1-20 to 1-10 of a grain. Diuretin, the sodium salicylate of theobromine, is something of a diuretic. The writer uses it in 15-grain doses. Apocynum, the Canadian hemp, is of some value in dropsy, being a diuretic and a cathartic; it should be distinguished from Indian hemp or cannabis indica. Half a grain of powdered apocynum may be given at a dose. In cardiac dropsy the writer has been most favorably impressed by the muriate of pilocarpine, given in divided doses to the extent of nearly two grains in a day, carefully watching its effects and guarding them by stimulants, and has had no unfavorable experience with it. As a general rule, it is best to use single remedies rather than combinations; otherwise, if the combination has no good effects, we are forced to discontinue it, and perhaps throw discredit on one of the ingredients that may be the very one we need.

In conclusion, it appears that in modern medicine milder methods are replacing the older ones—in particular that the idea of absolute rest has been superseded by rest alternating with physical activity; that

venesection has been supplanted by restoration of the capillary circulation, mainly by resistance exercises and carbonated baths. Hydragogue cathartics are in general to be replaced by stomachics, mild laxatives, and diuretics; heart stimulants by general nerve tonics or sedatives and nutrients; while drugs of the digitalis group are being gradually avoided, except in particular instances, for the reasons that have already been given.

GASTRIC HYPERESTHESIA AND ITS MANAGEMENT.

STOCKTON gives the following advice in the *Journal of the American Medical Association* of January 11, 1902:

As a diet it is best to select, in the begining, one that is very bland; for instance, milk or some milk preparation. To this should be added, first, the digestible farinaceous foods, then eggs; finally, meat juice at certain meals, and later scraped meat, meat powder, and next tender steak or chop, to which may be added some of the more easily digested vegetables. Thus the diet may be gradually increased from step to step, always being careful not to go beyond the point of toleration. When found that the allowance has been too liberal (or in case it is found necessary even with a very restricted diet), and the stomach reacts unpleasantly, it is advisable in order to relieve symptoms to give after meals antacids as soon as evidences of irritation arise. Mixtures containing sodium bicarbonate and the bismuth and strontium salts are commonly employed. The patient who may require these remedies regularly, when busy as a school-teacher, dressmaker, accountant, or business man, may find that the digestion is comfortable without remedies, provided a vacation is taken, or a period of rest is arranged for after each meal. When the case is of long standing, it will be found that electricity is of signal service. The continuous current should be employed with gastric electrode, the negative pole in the stomach, and a current of from 5 to 10 milliamperes, of a low voltage, should be used two or three times a week for a period of five minutes. The writer has noted great benefit from the faradic current used in the same way. Unquestionably benefit may be had from hydrotherapy, but great care must be taken not to overdo the use of cold water. A very brief, cold spinal douche, the temperature carefully regulated, or the shower bath with the same qualifications, or the Scotch douche, are measures that can hardly be dispensed with when treating this condition as it occurs in the neurasthenic. When met with in the hysterical, great benefit follows the use of the mistura asafetida introduced per rectum, in doses of one ounce night and morning. It is necessary, however, to attend to the strength of the gastric chemistry while continuing the other measures.

It may be said that the cases referred to are not typical instances of gastric hyperesthesia. This might be said to depend entirely upon one's conception of hyperesthesia. These cases have come to be regarded as making up the largest class of patients to whom the term properly belongs. That the treatment is rational and suited to the condition seems apparent, for the reason that we have to deal with those in whom those distressing sensations develop in the stomach merely from the normal stimulus of food and digestion. Indeed, as has been stated, the symptoms arise when the stimulus is less than normal. It is, therefore, proper to regard these cases as instances of hyperesthesia. The writer is firmly convinced that there exists a misconception regarding the nature of many individuals thus affected, and that they are treated for diseases of digestion of which they are innocent.

In conclusion the importance of the regular examination of the stomach is once more insisted upon, in order that one may govern the diet intelligently. There is such a thing possible as keeping a patient too long upon a very restricted diet, and the stomach, instead of gaining in power, loses quite in the same way that the biceps atrophies for the want of use. And yet, if one is too ambitious and overtaxes the stomach in these hyperesthetic cases, there is produced in the patient real suffering, loss of courage, and a disinclination to take sufficient food. The writer regards this as one of the most practical questions relating to the so-called dyspeptic. It is probably the most frequently met with of any of the gastric disturbances. It is a mistake to regard it as a disease of the stomach; it really is a derangement of the organism, of which the stomach condition may be taken as an index.

TREATMENT OF CHRONIC ROUND ULCER OF THE STOMACH.

FUETTERER gives the following advice in the *Journal of the American Medical Association* of January 11, 1902:

When an ulcer of the stomach is diagnosed, even if a copious hemorrhage from the stomach has just occurred, or if in the absence of classic symptoms there is reason to believe that a patient has an ulcer of the stomach, the blood is first examined, ascertaining the percentage of hemoglobin. The patient is then put to bed; the juice of five pounds of beef daily, properly prepared, is administered, until the percentage of hemoglobin becomes or approximates the normal, or nearly so; and then we prescribe a rest cure, as it is usually employed, lasting from four to six weeks, giving beef juice when necessary, always controlling the percentage of hemoglobin by regular examinations of the blood.

The general consensus of opinion as to the value of the rest cure is very favorable, and rightly so, but we must consider that by subjecting a patient who is already anemic to such a treatment we do not meet all of the indications. By keeping the stomach quiet we no doubt add to the chances which promote healing of the ulcer, while, on the other hand, by starving the patient, or by giving only milk and nutritive enemata, we make worse the anemic condition, thereby lessening the chances for healing of the ulcer. By administering the elements which are lacking in the blood, and putting the organ at rest, we meet both indications.

The immediate effect of the rest cure is, as a rule, very pleasing, but if we observe our cases critically after they have left "cured," we will find sufficient cause to correct our statistics, and the ultimate prognosis will appear in an entirely new light.

To outline the writer's mode of treatment in a general way, he recommends the following:

1. If we diagnose an ulcer of the stomach, or if, in the absence of convincing symptoms—which are so often lacking—we have cause to suspect an ulcer, we must at once ascertain the percentage of hemoglobin.

2. We advise the patient to go to bed, either in a hospital or at home, employing the services of a trained nurse.

3. We give the juice of five pounds of beef daily, as the case may require, to bring the percentage of hemoglobin up to normal as soon as possible. Prepared beef extract does not give the desired result. Peptonized beef solutions are not tolerated in sufficient quantity.

Leube-Rosenthal beef solution soon becomes objectionable to the patient.

Beef juice prepared as follows is generally well taken, and gives excellent results in uncomplicated chlorosis, and in secondary anemia that is not caused by carcinoma, etc.

Directions for Preparing Beef Juice.—(1) Order five pounds of finely-chopped round steak, to be brought at eight o'clock every morning, or keep it in an ice-box from the day before. The fat should be removed before the beef is chopped. (2) Mix the meat with a teaspoonful of salt, and put it into the upper part of a double boiler; cover without adding water. (3) Fill the lower part of the boiler with warm (not hot) water. (4) Keep the boiler on a kitchen stove for four hours, keeping the water in the lower part of the boiler just warm, so a hand can be placed on the latter without burning it. This will do, as a rule, but the use of the thermostat, regulating the temperature to 120° F., gives more uniform results. (5) Turn the beef every hour. (6) After four hours press out the juice with a potato-masher, spice, and let patient drink it in two portions, one-half at dinner and the other half at supper.

Five pounds of beef yield about a pint of juice, which will necessarily have to be taken in one portion at supper, if the patient works during the day. In other cases, one-half should be taken at noon and the other half at supper. The juice should be of a roast-brown color.

After the percentage of hemoglobin has become normal, the patient should have nothing to eat or drink for from two to five or six days. During this time the teeth must be kept very clean, and a good mouth-wash must be used often.

Rectal nourishment enemata may be given twice a day, preceded by a cleansing enema. Not more than one cleansing enema should be given before the food is injected. The nutritive enema may consist of one egg, five grains of pepsin, eight ounces of normal salt solution, and a glass of claret mixed.

If the enemata should cause discomfort, they must be stopped immediately. Serious collapse has been observed in a perfectly

healthy man, twenty-eight years of age, after such injection, and frequently discomfort was caused in others, quite out of proportion if we consider the slight benefit derived from such enemata. Nutritive enemas become really unnecessary when we allow our patients the use of large amounts of beef juice. After the days of total abstinence from eating and drinking, we give milk for a period of from four to six weeks, ordering beef juice whenever necessary. The patient is then permitted to partake of solid food, either according to Leube's diet, if all goes well, or if we do not feel assured about the progress of the patient, Pentzold's diet is employed.

The immediate results of such treatment, if well applied to the individual case, are very gratifying indeed, but the prognosis of ulcer of the stomach is not nearly as good as our statistics would make it appear. A great part of the later complications occur because: (1) Patients present themselves too late; (2) the diagnosis is frequently not made, because the so-called classic symptoms are not manifest; (3) hemoglobinemia is not sufficiently considered, and, if so, not properly treated.

In conclusion, the writer is inclined to recommend gastroenterostomy early, in cases of stenosis of the pylorus, particularly if he is convinced that it is caused by the scar of an ulcer of the stomach, on account of the frequency with which carcinomata originate from such ulcers, through mechanical irritation of their margins. Such a mechanical irritation is much relieved by gastroenterostomy, and therefore the danger of carcinomatous development may often be averted.

TREATMENT OF CHRONIC MYOCARDITIS.

MUSSER, in the *Journal of the American Medical Association* of January 11, 1902, has this to say in regard to the treatment of one or two of the clinical manifestations of myocarditis. The first he considers is angina pectoris. The treatment of the paroxysm is so familiar to all that it needs no argument concerning it; but the treatment in the interval should be considered. When in course of myocarditis attacks of angina occur, then it becomes necessary to modify the habits of life and to avoid too much active exertion. As remedial agents we use nitroglycerin, or iodide of potassium, and avoid digitalis and other preparations which increase the pressure of the blood. In using nitroglycerin, it should not be given in ordinary doses of a drop of the solution every two or three hours, but it should be rapidly increased until we get the physiological effects of the drug. Cases in the practice of the writer had taken up to half a drachm of the one-per-cent solution three times a day with the greatest benefit. It is to this point which he wishes to refer especially in the treatment of angina pectoris. In these cases in a fair measure it is in our power to prevent cardiac hypertrophy from occurring. The patient must be put upon a lower scale of life as regards exertion; as soon as he begins to live upon the same scale as an ordinary individual, with ordinary blood-pressure, he will have attacks of angina pectoris.

The dyspnea of myocarditis is of two forms: that occurring with dilatation of the heart, the other with asystole. In one case the dyspnea is almost constant, increasing into paroxysms, in attacks which take the form of sudden edema of the lungs, with chest oppression, and all the appearances of shock—pallor of surface, cold extremities, more or less anxiety, the expectoration of frothy material. Upon auscultation of the chest the bronchial tubes are found filled with râles, and on auscultation of the heart the most interesting conditions are found—arrhythmia and asystole. It is often impossible to recognize any murmur on account of the râles in the chest. These cases are frequently mistaken for pulmonary conditions. Such a case must be treated first as a case of shock. We must relieve the pulmonary edema that has taken place; we must actively stimulate the heart and improve the circulation. Dry cupping of the chest and external hot applications bring the most speedy relief. There is no better remedy than morphine, administered hypodermically in small doses, for the relief of the patient. The author relies upon it, together with strychnine and nitroglycerin, where there is apparently a condition of high arterial tension; where this is not present morphine and strychnine alone will tide over the difficulty until the danger is past. Where there is venous stasis and lowered blood-pressure, the use of digitalis and ordinary stimulants will be sufficient to overcome the condition. The author knows of nothing which requires closer study and care in the application of therapeutic meas-

ures than these cases of chronic myocarditis. We must study not only the cardiac or cardiovascular condition, but also that of all the organs and structures of the body in order to treat them with satisfactory results and afford them the greatest amount of relief and comfort.

THE INFLUENCE OF SOME OF THE COMMONER DRUGS UPON THE GASTRIC FUNCTIONS.

In the *Journal of the American Medical Association* of January 11, 1902, REED says:

1. Perfectly normal stomachs are probably in the minority in large cities, especially among persons employed indoors.

2. In stomachs which are normal or approximately so, the digestion may be injured by a simple bitter tonic, taken even for a short time.

3. Quite moderate doses of HCl administered as a medicine may prove effective in hypochlorhydria, but are likely to do harm to normal stomachs and certain to aggravate hyperchlorhydria.

4. Pepsin and HCl rarely produce any good result when given alone, even to persons with weak digestive powers, and often retard the digestion of the albuminoids.

5. Pepsin and HCl given together much more frequently do good than either administered singly.

POINTS IN THE PROGNOSIS AND TREATMENT OF HYPERTROPHIED AND DILATED HEART.

FOXWELL states in the *London Practitioner* for January, 1902, that rapidity and irregularity of the heart due to organic valvular disease are greatly improved by digitalis and strophanthus, no matter what the valve affected may be. But if there be no valvular disease these remedies are much less efficacious, and better results are usually obtained with strychnine and bromide.

Cardiac tonics, especially the digitalis group, are of little service if the blood-pressure be unduly high; often, indeed, they increase the distress. This pressure must be first reduced. A man with orthopnea and dropsy, due to a large aortic heart, was treated for three days after admission into the hospital with strophanthus (3 minims) and ether (60 minims) thrice daily, and his urine averaged 20 ounces daily. The author then saw him, and added a grain of sodium nitrite to each dose of the mixture, and gave also one-third grain calomel every two hours for forty-eight hours, and then thrice daily. On the succeeding days his urine was 108, 118, 119, 97, 96, 64, and 54 ounces respectively, and he rapidly improved.

Generally speaking, it is much more important to lessen the heart's work by lowering pressure than to stimulate the heart by renewed exertion. The larger the heart, and especially if the condition of its muscle is doubtful, the more should this rule be insisted on. Further, if there be any complaint of nocturnal dyspnea or of cardiac pain, nitrite is added to the tonic, although the tension be not high, nor the radial thickened, for such symptoms indicate that the pressure during some part of the twenty-four hours is more than the heart can tolerate. When the kidneys are not seriously injured calomel is no doubt the best drug for this purpose. The author gives it in doses of 1-20 to 1-10 grain three to six times a day. If there be coexisting alimentary catarrh it is best to add four to ten grains of pulv. rhei co. to each dose of calomel.

THE TREATMENT OF CARDIAC DILATATION AND ASTHENIA.

In the *London Practitioner* for January, 1902, BURNEY YEO, in discussing the general considerations as to the appropriate treatment of cases of cardiac dilatation, says that in the first place the patient should be withdrawn from the influence of all those conditions which have caused it. In those cases in which overexertion has led to cardiac strain we must insist on the avoidance of all kinds of muscular effort, gentle exercise alone being permitted, and this restriction must be enforced for an adequate length of time. When this condition has been induced by overexcitement, emotional or mental, or by addiction to evil habits, these causes must be sought out and corrected. An open-air life in the country or at the seaside, gentle exercise, a nourishing but light and digestible diet, regular attention to the bowels, and early retirement to rest, are remedial measures too obvious to need insisting upon. When the disease can be traced to the use of tobacco, or is aggravated by it, this must be wholly forbidden, and the rapid improvement in health which usually follows the relinquishment of this habit will rarely fail to reconcile the patient to the sacrifice.

Some cardiac tonic will generally be advisable, and will indeed be indispensable, in these forms of cardiac dilatation and feebleness which occasionally follow attacks of acute febrile and septic maladies, and also in anemic cases. It will rarely, however, in mild cases be necessary to have recourse to digitalis, except when there is much dyspnea and troublesome palpitation. In such cases small doses of digitalis may be given in combination with iron, such as:

℞ Ferri et ammonii citratis, gr. lxxx;
Tincturæ digitalis, m. xl;
Spiritus ammoniæ aromatici, ℥ij;
Infusi calumbæ, ad ℥viij.

Misce, fiat mistura. Two tablespoonfuls twice a day, an hour after meals.

It is preferable in the less serious forms, however, to employ strophanthus, or strychnine, or nux vomica, with coca, in combination with iron, quinine, or arsenic as may seem desirable. The following has been found to be very serviceable:

℞ Quininæ sulphatis, gr. xvj;
Tincturæ nucis vomicæ, f℥ij;
(Vel tincture strophanthi, m. xl);
Extracti cocæ fluidi, f℥iv;
Spiritus chloroformi, m. lxxx;
Aquæ, q. s. ad f℥viij.

Misce, fiat mistura. Two tablespoonfuls twice a day, an hour before food.

In purely anemic cases iron and nux vomica, together with some aperient to insure a regular action of the bowels, will be most appropriate, as:

℞ Ferri sulphatis exsiccatæ, gr. xxxvj;
Saponis, gr. xviij;
Pulveris nucis vomicæ, gr. xxiv;
Aloin, gr. iv.

Misce et divide in pilulas xxiv. One or two (as necessary) twice daily, after lunch and dinner.

In cases of somewhat acute dilatation, however induced, the hypodermic injection of strychnine in doses of 1-60 to 1-20 of a grain will often be attended with remarkably good results.

In extreme cases of cardiac dilatation the ventricular muscle will often be found to be in a state of advanced degeneration, and digitalis and other cardiac tonics will usually fail in producing any restorative or strengthening effect on it. Our chief resource in such a case must be the most absolute repose, with careful attention to the general nutrition. Light, easily digested, or predigested, highly nutritious food must be prescribed—such as pounded meat very lightly cooked, beaten-up eggs, chicken and game panada, a little white fish when agreeable, milk, and a small quantity of good sound wine, or a little weak brandy or whiskey and water, but the total amount of fluid taken must be strictly limited so as not to augment the volume of blood. A regular action of the bowels must be maintained by suitable aperients.

Free action of the bowels is very advantageous in nearly all cases of cardiac dilatation and feebleness. Aperients should, however, be so given as to clear away only the residue of digestion. For this purpose the best method is to give an aloetic pill after dinner or at bedtime and a saline dose early in the morning, about an hour before breakfast. Careful attention must, of course, be given to the individual sensitiveness to aperient medicines.

DIRECT INTRODUCTION OF PURGATIVES INTO THE LARGE INTESTINE IN CASES OF OPERATION FOR SEPTIC PERITONITIS.

The attention of the profession is called to a method which is believed to be of great utility in the surgery of septic peritonitis by Mr. Marmaduke Shield, in the *British Medical Journal* of December 28, 1901, namely, the direct introduction of purgatives into the intestines at the time of operation. It is not too much to say that in many of these cases the patient's life hangs on the possibility of overcoming the paralytic obstruction, and the free evacuation of gas and feces. The worse the case the more difficult is this to bring about, since the patient vomits everything he takes by the mouth.

Hitherto, the writer has only used this method in cases of perforative appendicitis, and here the performance of the injection is very simple. The nozzle of a small syringe —the hydrocele-injecting syringe is a convenient form—is introduced into the "stump" of the appendix, and the solution directly thrown into the cæcum. Three drachms of magnesium sulphate, with ten drops of tincture of nux vomica, and a drachm of glycerin in an ounce of water, is the formula the writer has generally employed. Two hours afterward a turpentine enema is given, and the result has been excellent.

Dr. Shield has employed this method in five bad cases of septic peritonitis associated with perforative appendicitis. In every case the results have surprised him. And though

the number is too small for a pronouncement as to the establishing of intracæcal purgatives as a definite line of treatment, yet the cases are sufficiently striking to justify urging a trial of it by the profession.

It is obvious that in other cases the solution could be easily and safely thrown into the colon by means of a hypodermic syringe obliquely introduced. Further experience may elicit better purgatives than magnesia. The amount of magnesium sulphate is difficult to estimate. In one very bad case four drachms were introduced. The dose should be proportional to the age of the patient and the extent of the peritonitis.

CARE OF CASES AFTER OPERATION FOR PERFORATION OF THE STOMACH.

The questions of food, of the position of the patient, and of aperients have received too little attention, according to GILFORD (*British Medical Journal*, Nov. 16, 1901), in descriptions of the after-treatment of cases operated upon for perforation of the stomach.

The food must of necessity be liquid, and either previously digested or of such a character as to require no gastric digestion. Nothing but water, if the indications are favorable, or water containing some substance that is not food, should be given during the first twenty-four hours. If the operation has been severe, or if there is reason to suppose that the stomach will not tolerate liquids, it is best to inject a pint of warm water into the rectum to begin with. This may be done as soon as the patient has become conscious, and may, if desirable, be repeated every four hours. The quantity must vary according to the tolerance shown by the patient and the degree of thirst. In the greater number of cases, hot water may first be given by the mouth about four hours after the operation. To begin with only a teaspoonful at a time should be allowed, and care should be taken that it is really hot. Sometimes a little chloroform water is of use in allaying nausea, and now and again Gilford has found dill water or peppermint water most acceptable. They tend to allay the irritability of the stomach, and are also, of course, of some slight value as antiseptics. Nothing is perhaps more grateful to the patient at this time than a little tea. This should contain neither sugar nor milk, and should be made by pouring water on tea-leaves, and immediately pouring it off again. When it is found that no nausea or sickness is produced, a little food may be given. Milk is generally chosen to begin with; but this choice is probably the worst. Many adults cannot take milk; it contains proteids, and therefore undergoes digestion in the stomach, and this objection holds good in whatever form it may be given. Peptonizing the milk does not wholly overcome the objection. It is not palatable, either.

While food should not be unpalatable, it should not be too sapid or stimulating. There is an objection on this score to beef tea and other watery extracts of meat. One of the best foods is grape-sugar. Grape-sugar by itself is too nauseating, but combined with a flavor, such as that of raisins, it is nearly always palatable. Patients like it, and will often continue their raisin-tea long after they have become tired of milk and slops. The tea is made by pouring boiling water on half its bulk of chopped raisins. This is stewed for about two hours and then filtered. The filtrate may be given either with water or without, and either hot or cold, according to the wishes of the patient. Though it doubtless contains other substances than grape-sugar, these are apparently present in such small quantities that they may be neglected. Given at first in small doses and afterwards more freely, it is undoubtedly of value. Grape-sugar is probably of more value in dieting the sick than are any of the variously named meat extracts now so much in favor. Next to raisin-tea, Gilford has found a decoction of malt of service. This is made in a similar way, ground malt being substituted for raisins. It is, as a rule, not considered so palatable as the raisin-tea, but where it is liked it is useful as an alternative. If given too freely, it may cause diarrhea. After raisins or malt have been given from one to three days, a mixture of cream and water may be added to the list. At first it consists of one part cream to twelve of water, but it is gradually made stronger until it is double this strength. Cream is chosen because it undergoes digestion in the small intestine; and, if given at first well diluted, is a fat that is readily borne by the stomach.

These three preparations may be continued until the end of the first week or

longer. But, generally after the cream has been given for a day, Gilford begins to mix with it some starchy food. This must contain no more than a trace of proteid. Arrowroot, corn-flour, or pure starch, made into a thin gruel with cream and water and sweetened with grape-sugar, is a useful and palatable food. The patient, as a rule, improves on this diet, and there is no occasion to add to it until it is certain that the lesion in the stomach is safely sealed. It is probable that fresh wounds of the stomach heal as quickly as do those of the face, but it is best not to assume that union is complete until the end of the first week.

The position of the patient should be regulated by physiological requirements and the position of the ulcer. The ordinary supine position is not a good one. It is, in the first place, not natural, for probably in nine cases out of ten the position that is chosen for sleeping is more or less on the right side. The head and shoulders should be well raised, and this attitude Gilford believes to be the best in most instances.

In those instances of perforation in which the escape of gastric contents has been limited to the neighborhood of the stomach, and peritonitis has become localized in the same area, it is probably best, if possible, to refrain from irritating that organ by aperients. It is probably true that the higher up in the abdominal cavity the peritonitis exists, the more likely is vomiting to be an early and inveterate symptom. In cases of obstinate constipation, Gilford uses enemata consisting of four ounces of glycerin mixed with half an ounce of turpentine. These are used, as a rule, twenty-four hours after operation, though the time varies according to the amount of distention and eructation of gas. Soap and water, with turpentine, may also be given to the amount of a quart. Either of these may be repeated every four hours until decided relief is obtained.

EFFECT OF TESLA CURRENTS AND X-RAYS ON BACTERIA.

It is the opinion of ZEIT *(Journal of the American Medical Association,* Nov. 30, 1901) that the study of the effect of direct, alternating, Tesla currents and *x*-rays on bacteria has not received the attention it merits. At the end of an admirable paper on this subject, giving in detail accounts of experiments made by himself and others, he presents the following conclusions:

1. A continuous current of 260 to 320 milliamperes passed through bouillon cultures kills bacteria of low thermal death points in ten minutes by the production of heat—98.5° C. The antiseptics produced by electrolysis during this time are not sufficient to prevent growth of even non-spore-bearing bacteria. The effect is a purely physical one.

2. A continuous current of 48 milliamperes passed through bouillon cultures for from two to three hours does not kill even non-resistant forms of bacteria. The temperature produced by such a current does not rise above 37° C., and the electrolytic products are antiseptic but not germicidal.

3. A continuous current of 100 milliamperes passed through bouillon cultures for seventy-five minutes kills all non-resistant forms of bacteria even if the temperature is artificially kept below 37° C. The effect is due to the formation of germicidal electrolytic products in the culture. Anthrax spores are killed in two hours. Subtilis spores were still alive after the current was passed for three hours.

4. A continuous current passed through bouillon cultures of bacteria produces a strongly acid reaction at the positive pole, due to the liberation of chlorin, which combines with oxygen to form hypochlorous acid. The strongly alkaline reaction of the bouillon culture at the negative pole is due to the formation of sodium hydroxide and the liberation of hydrogen in gas bubbles. With a current of 100 milliamperes for two hours it required 8.82 milligrammes of H_2SO_4 to neutralize one cubic centimeter of the culture fluid at the negative pole, and all the most resistant forms of bacteria were destroyed at the positive pole, including anthrax and subtilis spores. At the negative pole anthrax spores were killed also, but subtilis spores remained alive for four hours.

5. The continuous current alone, by means of Du Bois-Reymond's method of non-polarizing electrodes and exclusion of chemical effects by ions in Kruger's sense, is neither bactericidal nor antiseptic. The apparent antiseptic effect on suspension of bacteria is due to electric osmose. The continuous electric current has no bactericidal nor antiseptic properties, but can

destroy bacteria only by its physical effects —heat—or chemical effects, the production of bactericidal substances by electrolysis.

6. A magnetic field, either within a helix of wire or between the poles of a powerful electromagnet, has no antiseptic or bactericidal effects whatever.

7. Alternating currents of a three-inch Ruhmkorff coil passed through bouillon cultures for ten hours favor growth and pigment production.

8. High frequency, high potential currents—Tesla currents—have neither antiseptic nor bactericidal properties when passed around a bacterial suspension within a solenoid. When exposed to the brush discharges, ozone is produced and kills the bacteria.

9. Bouillon and hydrocele-fluid cultures in test-tubes of non-resistant forms of bacteria could not be killed by Roentgen rays after an exposure of forty-eight hours at a distance of 20 millimeters from the tube.

10. Suspensions of bacteria in agar plates and exposed for four hours to the rays, according to Rieder's plan, were not killed.

11. Tubercular sputum exposed to the Roentgen rays for six hours at a distance of 20 millimeters from the tube caused acute miliary tuberculosis of all the guinea-pigs inoculated with it.

12. Roentgen rays have no direct bactericidal properties. The clinical results must be explained by other factors, probably the production of ozone, hypochlorous acid, extensive necrosis of the deeper layers of the skin, and phagocytosis.

ABDOMINAL CONTUSION.

After presenting testimony as to the similarity of the early symptoms of simple abdominal contusions and one accompanied by severe intestinal injury, and to the need of exploratory celiotomy as an early routine measure, BOTTOMLEY *(Medical and Surgical Reports of the Boston City Hospital,* 1901) invites attention to certain facts.

Of twenty cases of injury to the intestine reported, nineteen died and one recovered. Eleven of the cases underwent operation, nine were treated expectantly: of the latter, all died; of the former, one recovered. Of the operated cases, one was submitted to operation less than four hours after entrance to the hospital and recovery followed. Four were operated on five or six hours after; one, twelve hours; four, twenty-four hours; and one, forty-eight hours after; all these died.

In the fatal unoperated cases the average duration of life after the receipt of the injury was 2.33 days, the extremes being seven days and one day; in the fatal operated cases the patients lived on an average 2.85 days after the receipt of the injury, the extremes being nine days and one-half day. Thus operation tends to lengthen rather than to shorten the patient's existence.

In the cases of simple contusion of the abdominal wall the symptoms disappeared in an average of 4.4 days, and such cases were discharged in from eight to fifteen days. In two cases of this series exploratory incisions were made; nothing abnormal was found in either, and uneventful recovery ensued in each case.

A further study or discussion of the symptoms of these two classes of cases can produce no other conclusion than that the physical signs correspond neither to the amount of violence exercised nor to the amount of injury done. No one sign or combination of signs is sufficiently constant to indicate the nature of the injury or to serve as a basis for diagnosis. The only present means of making an exact diagnosis sufficiently early for treatment to be of avail is an exploratory laparotomy. When we wait for the usual signs of intraperitoneal trouble to present themselves we wait too long. Even improvement in the symptoms in the first few hours should not be allowed to deceive us. The reaction from the shock may cause such a temporary improvement even in the most dangerous cases; but instead of causing us to hesitate in our procedure it should on the contrary be seized as a favorable opportunity to go ahead. Perhaps very many laparotomies may be done and no visceral injury found; but the danger to life in such an event is exceedingly small, and the necessitated additional time to be spent in bed is not to be weighed against the life that may probably be saved and will be saved in many a case. Early operation will not lead to the recovery of every case of intestinal injury; but it seems far more reasonable than operation after signs of beginning general peritonitis have appeared and almost all chances of recovery have disappeared.

As far as statistics go they tend only to

strengthen this position. Nimier *(Arch. Méd. et Pharm. Mil.,* March, 1898), mentions 307 cases of abdominal contusion caused by horse kicks. All were treated expectantly; 215 recovered, and 92 died. How many of the 92 would have been saved by an early exploratory incision and the knowledge thus obtained?

Schmitt *(Münch. Med. Woch.,* July 19, 1898) finds that a mortality of 97.5 per cent has followed the expectant treatment of cases of abdominal contusion with symptoms sufficiently severe to suggest possible perforation of the intestine. On the other hand, Petry (quoted in *Prog. Méd.,* June, 1901) presents a table of 42 similar cases, operated on between 1883 and 1896, which shows a mortality of 66.7 per cent, while Kirstein's *(ibid.)* 18 cases, operated on between 1897 and 1899, resulted in a mortality of 55.5 per cent. In four of the latter's cases laparotomy was done within five hours after the receipt of the injury; all these recovered, and his statistics bear out the fact that every hour that goes by after the receipt of the injury lessens the prospect of cure by operation. The reported mortality of cases operated on in the first twenty-four hours is 45 per cent; after the first twenty-four hours 66.6 per cent. These figures, compared with the 97.5 per cent mortality of the expectant plan, speak for themselves, and make a strong plea for very early interference.

To sum up in a few words, it may be said that at present there are no certain means of distinguishing between a simple abdominal contusion and one complicated by severe intestinal injury, except through an exploratory incision. This, to be of most avail, must be done within a very short time (three to five hours) after the receipt of the injury. Having no other certain method of diagnosis, and the promptness of the operation being the feature necessary for its success, exploratory laparotomy, combining as it does opportunity for a certain diagnosis and the best possible treatment, if severe injury be present, should be a very early routine measure in all but the most trivial cases of contusion of the abdomen.

TREATMENT OF PILES BY INJECTING CARBOLIC ACID.

Certain forms of hemorrhoids may be treated, according to GAY *(Medical and Surgical Reports of the Boston City Hospital,* 1901), by the injection of a weak solution of carbolic acid. This method, though limited in its application, has fallen into disrepute, but only because of failure to recognize its proper field and the proper method of applying the treatment.

In applying this mode of treatment especial attention should be paid to the following points: (1) The variety of piles; (2) the strength of the solution; (3) the amount used at each treatment.

Internal piles are the only ones that should ever be subjected to this method of treatment. Those piles which are above the internal sphincter, or which will remain there, when so placed, are the proper ones, and so far as the writer knows, the only variety that will yield satisfactory results from the treatment by injection. This point is of vital importance to the success of the operation. External piles are made worse by the procedure, as they swell up, and are sorer and more troublesome in every way after injection.

The strength of the solution of carbolic acid should not exceed ten-per-cent. Gay has always used the following: Carbolic acid (95-per-cent) one part, glycerin and water each one part. He has had no experience with any other preparation, but can recommend this one as being efficient, and not attended by any unfavorable symptoms.

The amount of solution which should be injected into each pile depends upon the size of the tumor. For one as large as an ordinary filbert, one minim is sufficient; for larger ones two minims is required. More than this last amount is seldom necessary. In the experience of Gay this quantity has not produced any untoward results.

The operation may be performed in the following manner: The patient is directed to sit upon the stool for several minutes, and strain as in the effort to evacuate the bowels. In this way the piles are distended and brought down to the anus. The patient then lies down upon his left side with knees well drawn up. With his right hand he raises his right buttock, and strains down again, while the operator gently opens the anus with the fingers of his left hand, in case the piles are not in plain sight. An ordinary hypodermic syringe having a sharp needle and charged with the solution is thrust into the pile, and one or two minims injected into its center. The needle is slowly withdrawn, and the piles replaced above the internal sphincter.

The introduction of the needle is not painful, and the carbolic acid causes only a slight burning sensation, which is of short duration. - The patient goes about his ordinary business. The bowels are encouraged to move regularly, and no change is made in his daily habits.

The operation may be repeated in a week or later. Gay never injected more than two piles at one visit, and never had occasion to repeat an operation upon the same tumor inside of a year, although there can be no objection to doing so after the effects of the previous operation have disappeared, say in two or three weeks.

If the following points receive careful attention, relief more or less complete is pretty certain to follow this operation—a relief that in some cases will result in a permanent cure:

1. Inject only *internal* piles.
2. The solution of carbolic acid should not exceed ten per cent.
3. Do not repeat the operation under a week.
4. Inject only one or two minims into each tumor.
5. Inject not more than two piles at any one time.
6. Promise relief only, and not a radical or a permanent cure.

DIVISION OF THE SENSORY ROOT OF THE TRIGEMINUS.

FRAZIER *(University of Pennsylvania Medical Bulletin,* December, 1901) performs this operation, which was proposed by Spiller, as follows:

1. Reflection of a horseshoe-shaped flap of skin and subcutaneous tissue. The flap corresponds in width to the length of the zygoma; its base is on a level with the lower border of the zygoma, its convexity reaching a point six centimeters above.

2. Division of the zygomatic processes of the malar and temporal bones. After reflection of the superficial flap of skin and subcutaneous tissue an incision is made in the periosteum over the middle of the zygoma throughout its length, and the periosteum elevated sufficiently to allow of the introduction of the bone-cutting forceps and the division of the zygomatic processes of the malar and temporal bone.

It may be found of great value to resect the zygoma in order to be able to retract the temporal muscle sufficiently to allow a proper exposure of the field of operation. One or two sutures introduced at either end of the fragment through the periosteum will suffice to insure fixation until union occurs. Necrosis of this fragment can be avoided if one bears in mind that the bone receives a liberal blood-supply through the periosteum, and avoids stripping this structure from the bone except at the points where the bone-cutting forceps have to be applied.

3. Reflection of a horseshoe-shaped flap, composed of temporal fascia, muscle, zygoma, and pericranium, corresponding in shape to the superficial one but of somewhat smaller dimensions. This flap is reflected sufficiently to expose to view the temporal fossa; during the operation it will be subjected to considerable traumatism consequent to the constant traction and pressure, and will be swollen and tender for a short time.

4. Removal with the trephine of a button of bone at a point corresponding to the middle of the area exposed, and enlargement of the opening with the rongeur forceps until its diameter measures three to four centimeters. The usual precaution must be taken in trephining here as in any portion of the calvarium where the bone is of such variable thickness, in order to avoid injuring the dura; and additional precautions are necessary in this region owing to the fact that the middle meningeal artery lies immediately beneath the button of bone to be removed. With the rongeur forceps the trephine opening is enlarged about equally in all directions, and should extend downward to the level of the crista infratemporalis.

5. Separation of the dura and exposure of the ganglion and its sensory root. The adherent dura is separated by blunt dissection (the handle of a scalpel enveloped in a single layer of gauze will meet all indications) inward and forward until the foramen ovale or rotundum comes into view, either of which serves as a guide to the site of the ganglion. Protracted and persistent oozing follows the separation of the dura from every point at which it is adherent to the skull; the older the patient the firmer the adhesion and the freer the hemorrhage. Hemostasis can be effected only by pressure and heat; small pledgets of gauze saturated with a hot saline solution are cautiously applied to the bleeding point and allowed to remain for periods of two to five minutes. The dura is most adherent to the skull at the margins of the foramina, so that the

most troublesome bleeding is not experienced until one has arrived almost at the site of the ganglion. Second only to hemorrhage as a troublesome feature of this stage of the operation is the presence of large bony eminences on the floor of the middle fossa. As pointed out by Amyx, these eminences are more commonly met with in heads not having a great transverse diameter between the ears, but whose external bony prominences are well marked, rather than in those skulls with a large transverse width; these prominences are situated usually external to the foramina, and if very large will have to be chiseled off in order to expose the foramina to view and remove the ganglion. In some cases the ganglion itself lies beneath a bony roof as though it were a continuation of the petrous portion of the temporal bone.

With hemorrhage well enough under control to enable one to recognize the anatomical landmarks, the operator makes an incision into the dura and dura propria between the foramen ovale and spinosum, and with a blunt dissector separates the dural envelope from the upper surface of the ganglion as far back as may be necessary to expose to view the sensory root.

The method to this point does not differ from that followed in extirpation of the ganglion; but now the sensory root is to be liberated and divided. When fully exposed, it is picked up on a blunt hook, which is passed around the nerve from without inward. The nerve is divided by making traction with the hook or cutting directly upon the hook with knife or scissors. A better plan would probably be, after elevation of the nerve upon the hook, to grasp it with a pair of forceps, hemostatic or dissecting, and to remove a small section with knife or scissors.

The sensory root may probably be isolated from the motor root so that the integrity of the latter may be preserved, but this requires great dexterity, and may probably be determined only by future repeated observations.

In closing the wound, the section of zygoma is returned to its normal position and secured in place by one periosteal suture at either end. While there is no danger of displacement as a result of muscular action, the fragment may be dislodged during the application, the changing, or the pressure of the dressing, and for this reason the introduction of a suture at either end is recommended. A narrow strip of gauze enveloped as it passes by the scalp in a cuff of rubber tissue is introduced for drainage. If the bleeding is free at the conclusion of the operation it must be controlled by pressure with strips of gauze. The rubber tissue, by preventing the edges of the scalp wound adhering one to the other, will insure perfect drainage. The wound in the temporal muscle and fascia is closed with buried interrupted catgut sutures, and the superficial wound with interrupted silkworm-gut sutures.

A special protective dressing is applied to the eye in order to prevent corneal ulceration.

Frazier remarks that whether or not operation for the relief of tic-douloureux will receive the indorsement of the surgical profession and take the place of the operation now in vogue, will depend altogether upon the acceptance without reservation of the facts embodied in the following two assertions:

Regeneration of the sensory root will not take place after its division; and

Liberation and division of the sensory root, obviating many of the operative difficulties associated with the liberation and extraction of the ganglia, is easier of execution; the integrity of the structures of the cavernous sinus is not endangered; and the operation should be attended with a lower mortality.

This operation is practically complete when the posterior aspect of the ganglion and its sensory root have been exposed; that is, it is practically complete before the difficulties most serious and troublesome common to other operations have even been encountered. The risk of injuring the sixth nerve is avoided.

ROUND LIGAMENT VENTROSUSPENSION OF THE UTERUS.

The operation which GILLIAM *(New York Medical Journal,* Jan. 4, 1902) has devised fulfils, he believes, every indication of a safe and efficient anchorage of the uterus without in any way curtailing its normal range of mobility. Profiting by experience, however, he has modified the operation as at first performed, so as to simplify the technique and improve its efficiency.

An abdominal incision three or four inches in length is made in the median line

at the usual site between the umbilicus and pubes. The adhesions are broken up and the fundus brought forward. With a finger and thumb or a pair of bullet forceps the broad ligament of one side is seized and brought to the opening. By lifting up the anterior surface of the broad ligament on the tip of a finger applied to its posterior surface the round ligament is brought into view and is picked up, either between the thumb and finger, or with a bullet forceps. Selecting a point an inch and a half from the uterus, a thread is passed under the round ligament and the ends of the thread are brought out of the opening and secured in the bite of a clamp forceps, which is laid upon the surface of the abdomen. The other ligament is sought for and secured in the same manner. At a point about one inch and a half above the pubes, the peritoneum, muscle, and fascia at one edge of the wound are caught up by a volsella and pinned together, being careful that the edges of these layers are in line. Traction is now made, and with a small retractor the skin and superficial fat are drawn in the opposite direction, uncovering the fascia. With a narrow-bladed knife, or better with the perforating forceps devised for the purpose, a stab wound is made from the surface of the fascia into the peritoneal cavity, the instrument entering one-half inch from the edge of the abdominal incision, and passing obliquely downward and outward, emerging on the peritoneum one inch from the edge of the abdominal incision.

If the perforating forceps is used, the jaws are separated, and by an outward movement of the handle brought into plain view at the large opening. The thread which loops the round ligament is now placed in the jaws, the clamp forceps removed, and the perforating forceps withdrawn, bringing with it the thread and the ligament. If a knife has been used to make the perforation, it is withdrawn and a slender forceps introduced, with which the thread is caught up and the ligament drawn into place. Now, while the ligament is held taut, with its loop end a quarter or third of an inch above the surface of the fascia, a catgut suture is passed through it, including the tissues on either side, and back again, where it is tied. This is cut close to the knot, the suspending thread cut on one side close to the ligament and withdrawn, and the volsella and retractor removed. The other side is dealt with in like manner and the abdominal incision closed. After both ligaments have been fastened, it will be found that an opening exists between the uterus and abdominal wall, of from seven to nine inches in circumference, thus obviating any possibility of strangulation of the bowel. It will also be observed that the uterus is not suspended, but rests easily and naturally on the bladder, from which it can be raised to a position little short of the vertical. Thus the uterus is enabled to conform to the altered conditions of the bladder, rectum, and to the various bodily movements. Should pregnancy ensue, the ligaments develop *pari passu* with the growth of the uterus, and there is neither embarrassment in gestation nor difficulty in parturition.

TREATMENT OF PROSTATISM.

GUIARD *(Annales des Maladies des Organes Génito-Urinaires,* No. 9, 1901) under this title discusses some practical points of extreme value, since every physician is called upon to treat patients suffering from some of the effects of prostatic enlargement. He says these patients may be classed under three headings: the first characterized by recurrent congestion, the second by incomplete or complete retention, and the third by distention of either the bladder or of the entire urinary apparatus. Each one of these varieties assumes a different aspect in accordance with whether there is or is not infection.

The first point which Guiard takes up is in regard to the difficulty sometimes experienced in passing a catheter for the relief of urinary retention due to prostatic obstruction. This difficulty is encountered when the end of the instrument reaches the orifice of the membranous urethra, and is due mostly to the elasticity and depressibility of the floor of the urethra, which becomes particularly marked in the bulbous region of old men. This urethral pouching can be partly obliterated by strongly pulling out the penis as the sound is passed, and by keeping the extremity of the latter in close contact with the upper urethral wall; also by pressing upward against the perineum with the fingers of the left hand, thus lifting the tip of the instrument, while with the right hand it is pushed onward. Especial precaution should be taken against using the sound as a lever.

Even with all these manipulations it frequently happens that the sound cannot be passed, even by those most skilled in its use. This, in some cases, is doubtless due to the fact that its beak is pressed too firmly against the upper wall of the urethra, folding the latter back, and hence it does not come in contact with the opening through the compressor. Success will sometimes follow by using the sound as a probe—that is, making its point feel for the true way—avoiding all force, and remembering that the opening is not found by hugging too tightly the upper or the lower wall, but that it lies midway between the two. This maneuver is greatly aided by manipulations of the fingers of the left hand in the perineum. If the tip is passed through the membranous urethra, the sinuosities of the prostatic portion of this canal may be so marked, from irregular growth of the prostatic lobes, that it may be impossible to pass the catheter further without the help of a mandrin.

The maneuver advised by Guyon in general consists in rendering a soft instrument more rigid by introducing into its lumen a mandrin which can be bent to that curve which best suits the case being treated. When the obstruction in the prostatic urethra is encountered, the catheter is withdrawn a few millimeters, the mandrin is then pulled out, while the catheter is pressed onward. These two acts should be exactly synchronous. The withdrawal of the metal support from the end of the catheter allows it to become again supple, so that it follows the irregular course of the urethra, while the rigidity afforded the catheter by that part of the mandrin which still remains in it enables enough force to be applied to drive this supple end forward.

These manipulations will succeed when all other means have failed. Perhaps the almost uniform success with them is incident to the fact that as the mandrin is withdrawn the end of the catheter is carried along the upper urethral wall. It must be remembered, however, that this maneuver is likely to fail unless the end of the catheter is drawn out a little from the point of the obstruction before practicing it; also it will almost certainly fail if the maneuver is attempted before the end of the catheter has passed the membranous urethra.

Guiard has long since renounced this double movement. He holds in his right hand a mandrin properly fixed until the catheter passes beyond the sphincter and not quite to the obstacle. He then, with his left hand, pushes in the catheter, holding the mandrin fixed, and feeling carefully for any resistance which may be encountered. He does not take out the mandrin until the urine begins to flow, when it can be removed with due respect to the normal urethral curve. This, he holds, is a much simpler manipulation than that described by Guyon.

He notes that great service is rendered by the employment of whalebone mandrins. It is dangerous to trust patients who are compelled to catheterize themselves with instruments of this kind, and yet there are many who experience so much difficulty in introducing an instrument that they inflict more or less traumatism upon themselves each time they attempt it, besides suffering much anxiety lest the attempt be futile. It is these cases which are especially benefited by continued catheterization for several days, but some are not helped even by this treatment. Under these circumstances the whalebone mandrin is of great service, since the patient may be instructed in its use, so that the passing of the catheter becomes comparatively easy and painless. Those employed by Guiard are 40 or 50 centimeters long, and of a caliber 6 to 9 French, so that they may be readily introduced into a woven instrument, No. 15 or No. 16. If they are gently heated with an alcohol lamp they may be given any curvature which seems needful.

When the prostatic is unable longer to empty his bladder spontaneously, he must be carefully instructed in the technique of catheterization. Oral teaching is insufficient. The directions must be written, or, since this is scarcely practicable, because of the minuteness required, they had better be printed. In addition, the patient must be personally instructed as to the sterilization of the catheters. Guiard prefers that they should be soaked in a solution of silver nitrate, 1:200. This drug does not deteriorate the instruments, and requires no special apparatus. He advises that each catheter, as used, should be placed in a receptacle, a fresh one being employed every time the bladder requires drainage. At the end of twenty-four hours these catheters are sterilized together.

They are first washed with soap and hot water, and are then dipped for some minutes in silver nitrate solution. Next they

are dipped in boric acid to remove the nitrate, and are finally stored in a sterile receptacle until they are required for use. This is easily accomplished at home; when the patient is traveling it becomes more difficult. To overcome this difficulty, Guiard has devised an ingenious metallic box in which a catheter can be coiled up. In the center of this box there is a receptacle for boric ointment. This metallic box is sterilized with an alcohol lamp. Three or four cotton tampons soaked in boric acid are placed in the box, by means of which the meatus may be cleansed. The patient may carry a number of these boxes, and of course he is instructed in the proper method of cleansing his hands.

Guiard has for twelve years been employing rectal applications of antipyrine with laudanum for the relief of painful affections of the urinary tract. These injections usually precede strong applications of silver nitrate or the crushing of stone. In the latter case vesical spasms are much less marked after such injections, even when the patient is under chloroform. When the bladder is healthy, such a rectal lavage may often enable the surgeon to dispense with chloroform, these patients experiencing little pain and exhibiting none of those vesical spasms which render litholapaxy difficult and even dangerous. In patients suffering from enlarged prostate the painful congestions from which they suffer are distinctly ameliorated. As to inflammatory cases characterized by almost unendurable pain, and complicated by phosphatic calculi, the relief is often almost complete. Applications are made with a small glass syringe, which contains either half an ounce or an ounce. To this is attached a soft rubber catheter which is introduced into the rectum.

The solution is made by dissolving in half an ounce of water from 15 to 30 grains of antipyrin, and adding to this solution 10 to 20 drops of laudanum. The results following this treatment are infinitely better than those incident to the use of morphine or opium suppositories.

In cases of retention without infection, suprapubic aspiration is a simple and safe means of evacuating the bladder, and may be repeated many times. When the contents of the bladder are purulent, the small needle used for this aspiration readily becomes blocked, and even if most of the urine is drawn out the bladder is not completely emptied of the thick, mucous pus lying at its base. Moreover, infection of the prevesical tissue is likely to take place when the bladder again becomes extended, hence it is important that continuous catheterization supplemented by irrigation should be begun as soon as possible.

It is well known that infected bladders are especially likely to contain phosphatic calculi, and that these are repeatedly reproduced, even if the bladder has been entirely evacuated of them. It often happens, therefore, that a patient is obliged to submit to litholapaxy three or four times a year. The best means of preventing this recurrence is to subject the infected bladder to active antiseptic treatment by means of repeated irrigations of boric acid, and especially by applications of silver nitrate solution. It is also well, occasionally, to use large catheters for these washings, employing a piston syringe at these times and injecting a small quantity of liquid forcibly, so that the mucus, pus, and gravel may be mechanically washed out. This is much more efficient than is any medication in preventing recurrence of the calculi, but it is not an absolute safeguard.

Patients with this tendency should avoid a diet largely vegetable, and should shun alkaline waters, citrates and tartrates of lime and magnesia, and should abstain from food which is likely to increase the severity of the cystitis, such as shellfish, asparagus, and beer. It is possible that the prolonged administration of urotropin may prove of some service. Every month, even in the absence of symptoms, the aspirating apparatus employed for the evacuation of fragments in litholapaxy should be employed. This treatment, though painful, does not require the administration of a general anesthetic, and very frequently evacuates grains which would shortly become comparatively large stones. This treatment was first practiced by Guiard in 1885, on a patient who had been subjected by Guyon to five litholapaxies in two and one-half years. Each monthly aspiration demonstrated the presence of small calculi, and some were passed spontaneously for about eight years later. During all this time litholapaxy was not necessary.

As to the operation of lithotrity upon prostatics, the intravesical projection of the median lobe constitutes an almost insurmountable barrier to the proper seizing and crushing of the stone. This mechanical

difficulty may be overcome by placing the patient in the Trendelenburg position, thus causing the stone to fall into the upper part of the bladder, where it can be readily seized.

TREATMENT OF COLLES'S FRACTURE.

In speaking of the variety of Colles's fracture in which the lower articular extremity, whether comminuted or not, is driven upward and backward upon the shaft of the radius, GRIFFITHS *(British Medical Journal,* Dec. 7, 1901) remarks that hitherto it has been generally thought when pulling the hand straight out fails to produce dissociation of the displaced fragments, the broken parts were jammed into one another—impacted—the shaft being driven into the expanded, and maybe split, lower end. That difficulty in dissociation of the fragments often occurs under these circumstances he is quite convinced of, and has demonstrated it on several occasions, but that firm impaction does exist in such cases is, however, clearly disproved by flexion of the wrist, which immediately replaces the fragments and restores to the radius its natural outline and contour. Impaction, which may be said to occur to a more or less degree in most examples, can be overcome with manipulation, with or without an anesthetic.

A pull upon the hand in a case of Colles's fracture is followed by a "give" which is like that obtained in an uninjured limb; a further pull causes simultaneous extension of the opposing groups of muscles, flexors, and extensors, which extension throws each group into a state of contraction, such as will scarcely yield to any moderate force. The ineffectiveness of simple traction upon the hand in reducing the displacement in an ordinary Colles's fracture is, he believes, thus accounted for.

The difficulty in the treatment of the fracture doubtless results from inability in effecting reduction, which can be accomplished with comparative ease by flexing the wrist-joint, but not by pulling the hand straight out. Once the fragments are reduced and the normal position is acquired by flexion of the wrist-joint, recurrence of the displacement can only be prevented by fixing the hand in this new position. As soon as the hand is again pulled into the straight line with the forearm the fragments become displaced, even in spite of moderate or considerable traction upon the hand; and if displacement does not recur immediately, it is almost certain to show itself as the swelling subsides, to the great disappointment of the surgeon. The hand can be fixed easily in this flexed position upon an ordinary splint, by placing a large pad in front of the lower end of the shaft of the radius and strapping the forearm and hand to the splint—a dorsal splint being unnecessary. This forms a good makeshift and serves its purpose well. The Levis splint serves a similar purpose—that is, it maintains flexion at the wrist, and there have been good results from it in all the cases treated with it.

THE CAUSE OF DIFFUSE PERITONITIS COMPLICATING APPENDICITIS, AND ITS PREVENTION.

From January 1, 1898, to May 1, 1901, OCHSNER *(American Journal of Surgery and Gynecology,* January, 1902) states that not counting the many cases outside of the Augustana Hospital he operated for appendicitis, a total of 565 cases were operated on, with 20 deaths—3.5 per cent mortality. These figures include all patients who entered the hospital suffering from appendicitis, even those who died a few hours after admission.

All these cases were classified by Ochsner into three groups. In the first group were those suffering from diffuse peritonitis. In the second were placed those who suffered from gangrenous or perforative appendicitis. In the third group were placed those suffering from recurrent appendicitis in the interval between attacks, or at the beginning of a recurrent attack when the infectious material was still confined to the appendix. There were 18 cases in the first class, with 10 deaths—55.5 per cent mortality; 179 cases of the second class, with 9 deaths—5 per cent mortality; and 368 cases of the third class, with one death—.35 per cent mortality.

As a result of clinical observations, Ochsner has arrived at the following conclusions:

Peristaltic motion of the small intestines is the chief means of carrying the infection from the perforated or gangrenous appendix to the other portions of the peritoneum, changing a circumscribed into a general peritonitis. This can be prevented by prohibiting the use of every kind of food and

cathartics by mouth, and by employing gastric lavage in every case in which there are remnants of food in the stomach or in the intestines above the ileocæcal valve, as indicated by the presence of nausea, or vomiting, or meteorism. The patient can be supported by the use of concentrated predigested food administered as enemata not oftener than once in four hours, and not in larger quantities than four ounces at a time. This form of treatment, when instituted early, will change the most violent and dangerous form of acute perforative or gangrenous appendicitis into a comparatively mild and harmless form. Cases of perforative or gangrenous appendicitis with beginning general peritonitis can usually be carried through the acute attack safely with this method. In all cases of this class gastric lavage should be practiced in order to prevent the absorption of decomposing material from the alimentary canal. In cases of doubtful diagnosis this form of treatment should always be employed. This treatment will prevent a large proportion of the most troublesome complications and sequelæ of appendicitis, such as ventral hernia, fecal fistulæ, extensive adhesions, etc. The patient should be permitted to recover fully from his acute attack before an operation is performed, except in cases encountered within the first thirty-six hours after the beginning of an attack, or in case of the formation of a superficial circumscribed abscess. It often requires but a small amount of any kind of food to change a harmless circumscribed into a dangerous diffuse peritonitis. The treatment does not protect the patient against a subsequent attack. It does not contraindicate the removal of a diseased appendix before the septic material has extended beyond this organ. It is indicated in all intra-abdominal conditions in which it is desirable to prevent the distribution of septic material by means of peristaltic motion. The laity should be taught to stop feeding and giving cathartics to patients suffering from intra-abdominal diseases.

GALL IN THE PERITONEAL CAVITY.

EHRHARDT *(Langenbeck's Archiv,* Bd. lxiv, Heft 2; quoted in *Centralblatt für Chirurgie,* No. 41, 1901) conducted experimental investigations to ascertain the absorption of gall from the peritoneum and its toxic qualities. Animals in whom the gall was diverted into the general peritoneal cavity died in from two to six days. Very little gall was found in the general cavity, nor was there peritonitis. A fatal icterus was caused by saturation of the blood with gall absorbed through the thoracic duct, a true cholemia resulting. In the second series of experiments the peritoneum was infected either with feebly virulent or dead cultures of bacteria, the resulting inflammation retarding the gall absorption. At the same time there was excited sufficient inflammatory reaction to close the artificial opening made into the gall passage.

These observations are in accord with clinical records showing that, after wounds of the gall passages, recovery takes place because of slight infection, which prevents rapid absorption. They also indicate that in case of wounds of the gall passages, intervention should be prompt, since a dependence upon spontaneous cure through a closure of the duct as the result of a slight peritonitis cannot be depended on. Either the opening should be closed or the gall should be drained from without the cavity. Prompt operation as soon as possible after trauma promises the best results. Later it may be extremely difficult to find the defect. A formal laparotomy is to be preferred to treatment by means of multiple punctures.

TREATMENT OF STRANGULATED HERNIA.

Altogether, GAMGEE *(Birmingham Medical Review,* December, 1901) has operated on 49 cases of strangulated hernia. Of these, 40 recovered and 9 died, a mortality of 18.3 per cent. He has collected 1266 cases of this operation; the mortality being 28.3 per cent.

Before herniotomy is resorted to, taxis, position, the ice-bag, the warm bath, etc., should be tried. In young babies, especially, position is a great help. Opium, to Gamgee's mind, should never be given.

In inguinal hernia it is always most important to keep the incision as clear of the scrotum as possible; the scrotal skin is difficult to render aseptic, and by making the incision high up the external abdominal ring is exposed and the constriction much more easily reached and divided. The constriction should, as far as possible, be exposed before it is divided. The edge of the external ring first requires division, and in

doing this Gamgee always slides under it a flat hernia director. He finds the hernia director a most useful instrument. In a large proportion of strangulated inguinal hernia the gut is still irreducible after the edge of the external ring has been divided, and it cannot be reduced until the neck of the sac has been cut; in other words, the constricting structure, or one of the constricting structures, is the neck of the sac. Before the return of the gut, it is most important to carefully examine the line of constriction; for, while the loop of gut as a whole may look to be in good condition, there may yet be a small gangrenous patch along the line of constriction, which if not detected will most certainly cause the patient's death. If the patient's condition will allow, it is always well to do as effectual a radical cure as possible, and even if the inguinal canal is not sutured, the neck of the sac should be ligatured, so preventing any pus that may form in the wound infecting the peritoneal cavity.

The same general remarks apply to femoral hernia, but it has been Gamgee's experience that in a comparatively small number of cases the constriction is situated in the neck of the sac, while in these herniæ the constriction by Gimbernat's ligament is usually very tight, and hence it is even more important than in the case of inguinal hernia to examine the line of constriction round the bowel. In femoral herniæ, also, as good a radical cure as possible should be done after the relief of the strangulation.

In the after-treatment it has been Gamgee's rule to give nothing by the mouth for twenty-four hours, then to give small quantities of milk and soda every hour, the amounts given being gradually increased and the intervals lengthened. Nothing solid has been given till the expiration of a week from operation, and then only if the bowels have been well moved. If the general condition was bad, nutrient enemata were given during the first twenty-four hours. Feeding of babies was begun very soon after operation. In the absence of contraindications, no effort was made to get the bowels open until the expiration of a week, and then always by enema. Gamgee never gives opium after operation.

In Gamgee's forty-nine cases there was gangrenous gut in six, and in one of these the gangrene simply affected a small area. In this latter case, on account of the man's bad general condition, to avoid forming an artificial anus, Gamgee invaginated the gangrenous patch, and stitched the two edges of bowel over it by six Lembert sutures. It was found later that this method appeared to have been successful, for the two faces of the bowel along the line of suture were adherent, and there had been no leakage. A greater problem is where the patch of gangrene is too large to be invaginated, and yet the patient's condition is not good enough to allow of an anesthetic being given, and of a formal operation being done. Gamgee thinks it better to make an artificial anus that will require closing by a subsequent operation. In making an artificial anus in four cases, Gamgee, contrary to the teaching of Treves, divided the constriction and pulled the gut well into the wound. The risk of infecting the general peritoneal cavity seems to him to be more than counterbalanced by the greater probability of relieving the obstruction, and the risk of peritonitis from the giving way of a gangrenous patch on the abdominal side of the constriction.

Gamgee met with a puzzling arrangement of the sac of a strangulated femoral hernia in three cases. On opening the sac, in one case, a quantity of blood-stained fluid was let out. No gut or omentum was visible, but the floor of the sac was bulged forward. On the sac being split open from end to end, this bulging floor was found to have an opening in it at its lower end about the diameter of a lead pencil, through which the gut could be seen lying in another compartment. The floor of the sac was split up, the gut exposed, and the operation completed in the usual way.

Another of the difficulties in operating on femoral hernia is the presence of an aberrant obturator artery. In a case where it was divided, a somewhat rare occurrence, it passed backward along the inner side of the femoral ring. The gut was returned as quickly as possible, and then Poupart's ligament and the lower part of the abdominal wall were cut through; the vessel was then easily secured.

On exploring the contents of the sac, in the case of a very large umbilical hernia, it was found that the base of an ulcer about the size of a dollar was so densely adherent to a loop of small intestine that it was quite impossible to separate them. The surface of the ulcer was therefore scraped and swabbed over with pure carbolic acid; and the piece of bowel, with the base of the ul-

cer still adherent to it, was returned to the abdomen, a large gauze drain being inserted. The result was satisfactory.

Reviews.

CLINICAL HEMATOLOGY. A Practical Guide to the Examination of the Blood with Reference to Diagnosis. By John C. Da Costa, Jr., M.D., Assistant Demonstrator of Clinical Medicine, Jefferson Medical College; Hematologist to the German Hospital, etc.

Philadelphia: P. Blakiston's Son & Co., 1901.

The number of works on diseases of the blood and on examination of the blood has multiplied very rapidly during recent years. In Germany independent works on this subject have been published by von Limbeck, Grawitz, and Rieder (atlas); in England a small book by Coles has appeared; while this country has contributed the text-books of Cabot, Ewing, and the one now under review. The earliest separate volume of hematology, the French work of Hayem, has been recently amplified and brought up to date in accordance with the present views of French hematologists. It will be seen, then, that the literature of hematology has not been neglected. The articles appearing in the medical journals make a very considerable part of the general medical literature. All of this activity in the study of the blood may be traced to the influence of Ehrlich, who, though not the author of an independent work on hematology, is in one sense the founder of modern hematology, and has in his numerous articles and in his monographic papers in Nothnagel's System covered every phase of the subject. The impetus which Ehrlich gave to hematology was in the earlier days entirely in the direction of morphological studies, and it is not remarkable, therefore, that up to the present time morphology has so largely engrossed the attention of those devoted to the study of this branch of medicine. This tendency, in our own opinion, though it has yielded good results, is somewhat unfortunate. It has in some quarters led to a confidence in ordinary examinations of the blood which fuller knowledge will show unwarranted, and has thus brought this mode of examination into undeserved disrepute among those who have neither the time nor the desire to thoroughly master the value of this adjuvant of other clinical methods.

Da Costa, as the hematologist to the German Hospital, has had an abundance of experience in the examinations of medical and surgical cases, and he has utilized this experience, together with his knowledge of the literature, to a very good purpose, producing a work which is both comprehensive in scope and satisfactory in detail.

He divides his book into the following sections: (1) Examination of the Blood; (2) The Blood as a Whole; (3) Hemoglobin, Erythrocytes, Blood Plaques, and Hemoconia; (4) The Leucocytes; (5) Diseases of the Blood; (6) The Anemias of Infancy and Childhood; (7) General Hematology. The last named section of the book would appear to us to have been better named Special Hematology, in accordance with the nomenclature used by pathologists who prefix the term "special" to the diseases occurring in special organs. Da Costa applies the term "general hematology" to the hematology of various special diseases.

In his accounts of the methods examining the blood, the author speaks clearly and to the point. The descriptions are evidently those of one who has had abundant personal experience. We are glad to find the hemoglobinometer of Dare given the prominence and the credit it deserves. Its advantages over the Fleischl instrument are undoubted, and the advantages over Oliver's instrument appear to the reviewer sufficient to merit its selection. We must agree with Da Costa in his statement that "the color standard of Dare's apparatus, being wedge-shaped, and therefore gradually blending the tints, is open to the same criticisms which have been urged against the scale of the hemometer." Nevertheless, it still possesses sufficient advantages over Oliver's instrument. In his description of the method of preparing cover-glass films of blood for staining, and in the illustrations accompanying the description, the author advises the holding of the cover-glasses in the fingers. This is opposed to the teaching of Ehrlich, who claims that the moisture from the fingers is always objectionable. Following Ehrlich's suggestions, we have always employed forceps to hold the cover-glass, and believe this is undoubtedly advantageous. On the whole, the chapter on the methods of examining the blood is very satisfactory, excepting

that we should have been pleased to see a more specific expression of the author's preferences, and also an estimation in each case of the value of the method. It is well known that many of the methods of examining the blood give merely crude approximations, while others are of very little clinical value. Much misunderstanding would be avoided if hematologists clearly acknowledged the deficiencies of certain methods and admitted the approximate character of other methods. The chapters on "The Blood as a Whole" are less complete than any other in the book. The author does not take up very fully the subjects of the immunizing bodies, the hemolytic and agglutinative principles, and other questions connected with the modern study of serum physiology and pathology. The four remaining portions of the book, devoted to the study of the blood-corpuscles and the diseased conditions of the blood, are very full presentations of the existing knowledge of these subjects.

The illustrations, particularly the colored ones, are remarkably good; indeed, we are not familiar with any that are equal to them in accuracy of coloring.

If we might venture to make an adverse criticism of the work, and in general the same criticism seems to us to be equally applicable to most other works on hematology, we would say that in detailing the conditions of the blood in numerous diseases too little attention is given to the probable influence of attending conditions, and the reader of the work is given the false impression that the blood presents peculiarities in each separate form of disease by which diagnosis can either be made or largely assisted. This is, of course, foreign to the intention of the author, but is the impression given by the voluminous discussion of blood conditions in various diseases. It seems to us it would be better to describe much more briefly, and in a way to illustrate their subsidiary importance, the condition of the blood under some general heading like secondary anemia or secondary alterations in the blood.

A. S.

CERTAIN PROBLEMS RELATING TO SURGICAL OPERATIONS. By George W. Crile, M.D., Ph.D. Philadelphia: J. B. Lippincott Co., 1901.

This work, the result of animal experimentation extending over three years, together with a clinical study, is well worth the careful attention of every active practitioner.

The first section is devoted to the effects of severing or mechanically injuring the vagi. It is noted that no amount of mechanical stimulation produces an arrest of the heart's action. On cutting both vagi, however, the blood-pressure rises considerably the frequency of the heart's action is much increased, and the length of the stroke is shortened. Respirations are greatly decreased in frequency, and the amplitude of the respiratory excursion is markedly increased. The respiratory mechanism is much more affected than the circulatory, and exhibits early signs of exhaustion.

The result of a research into the effect of intravenous infusion of saline solution shows that in shock the value of this treatment is incident to the fact that it adds force to the venous circulation; that the infusion merely tides over a circulatory crisis, during which other means for restoring the circulatory equilibrium or tone must be employed.

The deductions in regard to the therapeutic value of cocaine and eucaine are from a practical standpoint, perhaps, the most important of any in the book. Crile shows that either eucaine or cocaine injected into a nerve-trunk prevents the passing of afferent or efferent impulses, or, in other words, produces a complete physiological block; thus differing from a general anesthetic, which, while it abolishes pain and the production of voluntary motion, does not prevent such other efferent impulses as may produce changes in the frequency and the amplitude of the respirations, in the frequency and the force of the heart-beats, and in vasomotor action. The cocaine when injected into the nerve-trunks produces only temporary functional impairment, causing no chemical combination and no destruction. Not only are the nerve-trunks thus cocainized blocked to afferent impulses, but even a powerful electrical current can not force nerve impulses through the block. The same is true of the spinal cord. Cocaine is somewhat more prompt in its action than eucaine, but the latter is quite as effective as the former. As to the physiological action of these drugs, they partially or wholly suspend the inhibitory

function of the vagi when produced by indirect or direct stimulation.

The splanchnic areas of animals which have been cocainized and subjected to exposure and irritation do not exhibit the extreme congestion commonly observed in animals not cocainized, nor do the cocainized animals show any appreciable fall in general blood-pressure.

The cocained and eucained dogs endured more mechanical injury than the control dogs, the latter in all the experiments dying first. The use of these drugs seemed to increase the tendency to clot. Small doses acted as respiratory stimulants. The animals under the influence of these drugs were more difficult to keep in a condition of general anesthesia.

By utilizing these facts, Crile has performed operations upon the extremities without causing pain and without shock. He injected a one-per-cent solution of cocaine into the supplying nerve-trunks. By thus injecting into the external cutaneous, the anterior crural, and the sciatic nerves, he has performed five amputations of the leg below the knee, and in all but one the person was not aware that the operation was performed until told of it afterward. The block continued from twenty-five to thirty minutes.

In one case of malignant growth of the axilla, occurring in a woman seventy-four years old, an incision was made along the outer border of the sternomastoid muscle under one-tenth-per-cent infiltration cocaine anesthesia. The omohyoid muscle was retracted downward, the anterior margin of the trapezius backward, and the posterior margin of the scalenus anticus forward, thereby exposing the trunks of the brachial plexus, and by extending the dissection a trifle further downward and inward the arching subclavian artery was brought into the field. The nerves were then blocked by injecting, first on their outer covering, then into their substance, one-half-per-cent solution of cocaine, just sufficient to cause a local swelling. The subclavian artery was then closed by means of a clamp armed with rubber tubing. Thereupon the arm was removed at the shoulder-joint. The patient did not experience any pain except a slight twinge as the incision was carried around the posterior surface of the upper portion of the arm, supplied by the supra-acromial nerve. There was absolutely no shock, and the vessels were all picked up and tied before releasing the clamp from the subclavian.

Crile does not mention bleeding from the axillary vein, which from his description was not controlled. As a rule, this is more profuse and more difficult to control than a hemorrhage from the corresponding artery.

Crile calls attention to the reflex inhibition, both respiratory and cardiac, which may occur as a result of manipulation of the pharynx, particularly in operations near the glottis. This inhibition is prevented by hypodermic injections of atropine and by the local application of a two-per-cent solution of cocaine.

Experimental research relating to closure of the carotid arteries showed that a properly adjusted clamp could be left in position, closing the vessels for twenty-four to forty-eight hours, without serious injury to their walls. In no case was there clotting. The aseptic cases made good recoveries. Nor were there found emboli, nor thrombi in the brains.

The clamp should approximate the walls and not bruise them. Crile has devised one with a screw by which a proper adjustment may be made. This he proposes as a help in certain head operations necessarily attended by a great deal of bleeding. He reports some cases which demonstrate its usefulness.

LANDMARKS OF GYNECOLOGY. By Byron Robinson, B.S., M.D. Second Edition.
Chicago: E. H. Colgrave, 1901.

This book, the author states, is founded upon material gleaned from personal work in dissections and autopsies, and from clinical work in gynecological and obstetrical surgery. He presents some original views and conclusions, the results of such labor.

A landmark is defined as a point for consideration—anatomic, physiologic, and pathologic.

It is interesting to note that the author has extended his scope of gynecology, as originally understood, so that it embraces the intestinal and urinal tracts; presumably, however, only those of the female. He presents certain tabulations which may be serviceable, but to the ordinary comprehension require a second chart for their elucidation.

As is proper in such works, the first illustration is of the external genitalia, which,

perhaps because of its capillarity, seems especially shameless. There follows a less reprehensible picture of the same parts after the removal of the skin and the superficial fascia. Indeed, the anatomy is given in a very satisfactory manner, proper credit being rendered for the excellent illustrations, which have been borrowed. Plate No. 12 shows a dilated Fallopian tube apparently strewn with ox-eyed daisies, conspicuously numbered; these are accessory oviductal ostia.

Nearly half the book is devoted to anatomy, and here will be found elucidated Robinson's well known views upon this subject.

The second landmark in gynecology is entitled menstruation. This concerns, he believes, an active regeneration of the superficial and epithelial glands to prepare nidation for the coming ovum, since young epithelia are required to gestate the ovum. The menstrual process, he states, is intimately connected with the physical and psychical life of woman.

The third landmark in gynecology is labor; the fourth, abortion. Both these subjects, with their chief complications, are briefly considered. The fifth landmark is entitled discharges. These receive a color, odor, and micturition classification. The gonococcus and its local and general effects are considered at length. Chronic gonorrhea is said to be incurable by treatment, recovery on the part of the patient being simply a fortunate accident.

Most of the writing on these and other topics is comparatively clear. There are some sentences, however, which leave the reader in doubt as to the meaning; thus, in discussing the diagnostic value of the gonococcus as a means of determining the presence or absence of gonorrhea, though to the ordinary mind such discussion seems unnecessary, Robinson says: "To make permanent intracranial decisions in regard to all sexual matters is good advice."

The author believes that probably the best internal remedy to employ in gonorrhea is balsam of copaiba, and that the best local remedy is silver, a ten-per-cent solution.

The sixth landmark in gynecology is entitled the abdomen. After a discussion of the various surgical conditions, the author makes some very excellent concluding remarks concerning treatment.

The bowels are best drained by drinking half a pint of hot water containing half to a teaspoonful of magnesia sulphate, by going to stool at regular hours daily, and by eating food which leaves a residue. The kidneys are best drained by drinking three pints of hot water (best, half normal salt solution) daily. The skin is well drained by daily salt rubs. The vaginal douche, for its utility, depends upon the amount of fluid, the degree of heat, the composition of the douche, the position while taking it, and the method of its use. A couple of quarts of warm water is worthless. The fountain syringe should hold four quarts with four-foot head, and should be followed by a douche of fourteen quarts. For married women four quarts should be used at 103°, but the heat should be increased one degree at each sitting until as hot as can be borne. The amount of the douche is also increased one-third each time until five or eight gallons are taken. The douche should be used in the morning and in the evening before retiring. The duration of an eight-gallon douche should be twenty-five minutes. The patient should lie on the back with the thighs flexed on the abdomen and the legs flexed on the thighs, the head being sufficiently elevated to allow the water to drain down toward the feet. The douche should not be taken in bed or on the water-closet, or in the bath-tub, the author holding that an ironing board serves a good purpose. A handful of salt and a teaspoonful of alum may be added to each gallon of water. It is stated that each patient should have her own vaginal tube.

To beginners in laparotomy the author offers the following suggestions, which as life-saving means are worthy of a conspicuous place in every medical college: It is criminal to learn, with no facilities, to do laparotomy. Laparotomy without nurses should not be attempted in private houses. Before undertaking laparotomy, study under a master; ask to be allowed to tie a knot once in a while; and never lose a chance of assisting in or witnessing a laparotomy. Learn the after-treatment. Half the battle is with the intestines. In acute peritonitis or intestinal diseases withhold food through the mouth; feed per rectum. Study carefully the abdominal and pelvic viscera of the cadaver, and as many cadavers as possible. Never lose the chance

of doing a post-mortem or attending one. Study the viscera of animals. Be sure to make systematic experiments on the abdominal viscera of dogs. Always do the autopsy on dogs yourself. Note what damage to the peritoneum your manipulations have done. Observe what peritonitis really is. Be clean without chemicals. Learn to use very few instruments. Beginners should always invite a laparotomist—one who will suggest and criticize in a friendly spirit—to be present. Be careful of promises.

Correspondence.

LONDON LETTER.

By Raymond Crawfurd, M.A., M.D. Oxon., F.R.C.P. Lond.

The scheme of cancer investigation, to which I alluded in my last letter, has advanced a step further in that it has received the *imprimatur* of the Royal Colleges of Physicians and Surgeons, and the benediction of the King, which will do much to speed it on its way. The colleges have unanimously adopted the following resolution of the special committee: "That this committee recommends the two Royal Colleges to consider and develop a scheme for investigation into the causes, prevention, and treatment of cancer, and that for this purpose delegates be appointed by the two Royal Colleges (who shall have power to add to their number) to draw up a detailed scheme." A strong body of delegates has been drawn up by the two colleges. We hope the workers may be stimulated by the simultaneous working of the commission which the German government has appointed to consider the whole question. It is to be regretted that one of our most prominent workers in cancer research, Plimmer, should have already been requisitioned by the German government. The discussion on Sir William Banks's paper on mammary cancer at the Liverpool Medical Institution was of interest as formulating for the uninitiated the present position of theory and research. On the one hand Plimmer urged the claim of the so-called "cancer-body" to be regarded as the exciting cause of cancer. His arguments were based on its constant presence in cancer and its absence in other conditions, its predilection for the growing parts of the cancer, its organized structure, and the possibility of cultivating it *in vitro*. On the other hand, Stiles argued that the cancer-body is the product of degenerations and dropsical changes in the nuclei of the cells. However this may be, it is clear that if we are to make any progress we must do something more than heretofore in the direction of experimental research, not be content with mere examination of the structural forms of cancer. Vague theorizing is not likely to lead to the goal. In the last few weeks we have been edified by the thesis that cancer is due to excess of salt in the food; then Sir William Banks at Liverpool urged that cancer was more prevalent in people who indulged largely in meat as an article of diet; finally, in the discussion on this paper, Dr. Buchanan fancies he finds a constant association with the use of raw vegetables in the dietary. He suggests that the parasite is introduced into the body through the medium of some lower form of animal life, which is in constant association with such vegetables as are used in food. Surely this is learned trifling!

Professor Gruber's Harben Lectures, beyond their general excellence, will be notable for the pronouncement they contained on the true discoverer of serum diagnosis. Widal's claims have been so loudly and persistently asserted that nine-tenths of us nowadays speak of Widal's reaction. Gruber maintains that the claim is absolutely unfounded, and that Grünbaum made the first practical application of it several months prior to Widal. In these matters priority of publication is the only substantial claim, and there Gruber shows that beyond question Grünbaum was first in the field. One cannot but feel that Gruber and Durham have also claims to recognition, for they were the first to show that immune serum can agglutinate typhoid bacilli, and it was this principle that Grünbaum applied practically. Want of clinical material prevented sufficient experimentation to justify publication, and the circumstance of this was an announcement by Gruber at a medical congress in Vienna in April, 1896. Widal maintains that Gruber referred only to agglutination with serum

taken after convalescence, and that he himself was the first to work with serum taken during the course of the disease. This, however, is not the fact, as at least two of Grünbaum's experiments were on cases in the mid-course of the disease. The rights and wrongs of such questions as this are of more than academic importance, as while human nature is as it is, fame is the best incentive to the discoverer. Some, it is true, hide their light under a bushel, but more often it is hidden for them.

A recent number of the *Lancet* contained a suggestion by Sir Lauder Brunton as to the surgical treatment of mitral stenosis. This sufficiently valiant procedure has been essayed by him on animals, and also in the hearts of dead subjects at autopsy. It is a great satisfaction to find that his professional engagements have prevented him extending his researches in this direction, but in the note referred to he seeks to stimulate the not unready knife of the surgeon to the task. He prefers to cut the valves through their middle at right angles to the normal opening rather than to elongate the natural opening, and to do so by way of the ventricle rather than the auricle, and to insert the knife during diastole. It is difficult to see the advantage of this minute precaution unless the whole operation is to be completed in a single diastole—a triumph of surgical dexterity. We all know that the heart muscle will stand a good deal of surgical interference, and the difficulty does not lie therein; but will any one be found bold enough to attempt an operation of extreme delicacy on invisible structures varying their position from second to second? But even admitting the possibility of the procedure, the whole evidence of similar operations points to the fact that union of the divided edges would ensue with contraction, and the last state of the valve would be worse than the first. Nor at first sight is the advantage obvious of relieving mitral stenosis by the production of mitral regurgitation. Moreover, the suggestion is one that ignores the condition of the heart wall as *the* factor of importance in valvular lesions, just as students are content with the time of a murmur, without any knowledge of the state of the walls of the heart.

A discussion of first-rate importance at the Royal Medical and Chirurgical Society was introduced by Ballance and Purves Stewart in a paper recording some clinical and experimental observations on the regeneration of peripheral nerves. I regret that I cannot reproduce the microscopic sections and lantern slides which served to exalt their thesis into the region of demonstrative truth. Practically the paper was a strong plea for the "peripheral" doctrine of regeneration as against the doctrine of the "central" school. The two processes of degeneration and regeneration overlap in point of time, regenerative changes commencing before degeneration is complete. With regard to degeneration, they contend that degenerative changes affect the lower end of the proximal segment and the whole extent of the distal segment simultaneously, and do not spread from the center to the periphery, nor *vice versa*. Fragmentation commences in the axis-cylinders and medullary sheaths on the fourth day after traumatism, and is complete after the fifth day; absorption of the fatty débris is practically complete by the end of five weeks. As to the cellular changes in degeneration, diapedesis of leucocytes commences immediately after the injury, and is evident for two weeks, but then gradually subsides. On the second day the connective tissue cells commence to proliferate, and aid in absorption, and then proceed to the formation of fibrous tissue. The neurilemma cells proliferate irregularly somewhat earlier than the connective tissue cells; this is perhaps due to their greater nearness to the degenerating elements, so that they receive the chemical stimulus first. At first they also promote absorption, but afterward commence the regenerative process by arranging themselves in closely-packed longitudinal columns.

Passing to regeneration, changes occur in the proximal segment of a divided nerve which has not been reunited, that result in the formation of the well known so-called "end-bulb"—a clubbed body full of young nerve fibers intertwisted in all directions. Every new fiber is laid down in separate short links, each in apposition to a neurilemma cell, thickest near the nucleus of the cell and tailing off at each extremity. The end-bulb is formed by the development of new fibers in a bunching protuberance which is formed immediately the nerve

trunk is divided, from the curling back upon themselves of the divided nerve fibers. Regeneration occurs in this protuberance by the proliferated neurilemma cells secreting small islands of axis-cylinders and medullary sheaths. These islands overlap and ultimately fuse together to form a long nerve fiber continuous with one of the nerve fibers of the proximal segment above.

In the distal segment of a divided nerve, reunited to the proximal segment by sutures, the proliferated neurilemma cells arrange themselves in columns, separated by strata of proliferated connective-tissue cells, and proceed to form new axis-cylinders and medullary sheaths. At the end of three weeks numerous active neuroblasts may be seen in the distal segment, from whose opposite poles young axis-cylinders grow out longitudinally, stretching out toward similar processes of adjacent neuroblasts in the same longitudinal column, but not yet reaching them. By the end of four weeks these young processes have grown in length so as to overlap and fuse into long axis-cylinders. In the earliest stage the young fiber is deposited along one side of the body of the cell in the vicinity of the nucleus. As it grows in length it assumes a spindle form, the thickest portion being in the neighborhood of the nucleus; these short lengths of nerve fiber grow side by side till they overlap and finally fuse together to form a continuous wavy fiber, which as it increases in diameter attains the form of the adult fiber. The new fibers in the distal segment have a longitudinal direction from the outset, whilst in the intermediate scar tissue between the proximal and distal segments their direction is wildly irregular.

In the distal segment of a divided nerve in which the cut ends have been widely separated the process of regeneration is exactly the same. It does not, however, commence till four or five weeks after division, and progresses more slowly; also the new fibers do not pass beyond the immature sinuous state, unless sutured to the proximal end, when as before the anatomically perfect nerve fiber is reproduced.

Nerve grafts, up to two inches in length, were also employed both in men and animals where it was impossible to unite directly the two ends. These appear to function as a scaffold into which there migrate successively leucocytes, connective-tissue cells, and neurilemma cells. Alongside the ingrowing blood-vessels of the new living tissue replacing the graft, the neurilemma cells (derived both from the proximal and from the distal segments) advance into the substance of the graft, and form new fibers by the same method of overlapping and subsequent fusion. None of the original cells of the graft take part in this process of regeneration.

The clinical corollary of these experiments is that in every case of accidental division of a nerve trunk its reunion ought to be attempted either by—

1. Primary suture at the time of injury.
2. Secondary suture at a later date.
3. Transplantation of a portion of nerve from another animal.

The best suture is finest silk, three or four such being inserted into the fibrous sheath of the nerve.

In primary suture the newly-rawed surfaces, unless ragged, need no refreshing; hence no shortening of the nerve trunk results. Return of function does not occur before the end of the fourth week, as regeneration cannot occur till degeneration has taken place. In secondary suture the immediate results depend largely upon the length of time that has elapsed since the primary injury. If the period has been more than four weeks, an immediate return of sensation is often observed; no interval is too long, but in some cases where suppuration has occurred the resultant interstitial neuritis may be sufficient to prevent regeneration entirely. This may explain the failure of secondary suture in some cases, while strikingly successful in others. Removal of a small portion of tissue from the distal segment, and this is necessary for the purpose of rawing the surface, may show under the microscope that regeneration has taken place; then it will be safe to predict the success of the operation for secondary suture. Sensation will always return before motion, and in one case this was noticed as soon as the patient recovered from the operation. Nerve grafts are only recommended where suture is impracticable, and nerve grafting is preferable to turning a flap from one segment into the other, inasmuch as the making of such a flap diminishes the size of the nerve trunk from which it is derived, whereas a graft unites the undiminished ends.

If these facts are to be accepted, it is evident that the neuron theory cannot apply to

the peripheral nervous system. And on these facts Purves Stewart and Ballance contend that operation should always be attempted in any accessible part in which there is not total loss of galvanic excitability in the paralyzed muscles; and this latter should be a rare cause of exception, as they found some reaction to galvanism in atrophied muscles sixteen years after division of the motor nerve.

As Sherrington pointed out, it is difficult to see why if the nerve is a series of cells it should degenerate when cut off from the trophic nerve cell. Kennedy recorded an experimental observation of his own in which the median, ulnar, and musculocutaneous nerves were divided in dogs above the elbow, and the musculospiral was divided at the same point. The central end of the musculospiral was then attached by suture to the peripheral ends of the three nerves which supplied the flexor muscles, and *vice versa*. The result was that the animal in which these cross-sutures were made regained coördination of movement perfectly, but cortical stimulation showed that the areas governing flexion and extension had been reversed in position.

An important paper was read at the Royal Society of Edinburgh by Professor Schäfer on the existence within the liver cells of channels which can be directly injected from the blood-vessels. The actual sections were derived from injected specimens of liver of a dog and a cat left by the late Professor Rutherford to the University, and labeled "Shows injection within the liver-cells," and the date "1886." As Schäfer says, it is impossible to overlook the importance of the existence of intracellular nutritive canaliculi too narrow to admit blood-corpuscles, but doubtless capable of conveying the fluid portion of the blood directly to the cell protoplasm.

PARIS LETTER.

By R. H. Turner, M.D. (Paris).

Professor Roger, who is physician of the smallpox hospital at Aubervilliers, near Paris, has just written a very interesting article on the diagnosis of variola. Mistakes have been commonly made of late in Paris, from the fact that most physicians have seen few if any cases of smallpox. Dr. Roger admits that in some cases it is very difficult to recognize the disease. At the outset the initial symptoms are generally characteristic—high temperature, heavy chill, pain in the back and stomach, headache, delirium, and vomiting. If there is excessive backache the physician may think he is called for a case of nephritis, but in smallpox the quantity of urine passed is generally abundant, and without albumin. In hemorrhagic smallpox there may be hematuria, but at the same time there are other hemorrhages. In certain forms of smallpox the pain in the back is accompanied with shooting pains into the lower limbs and a certain degree of loss of power, which would give one the idea of the existence of myelitis. In this disease, however, the motor troubles are more pronounced, or accompanied by sensory or reflex troubles which do not exist in smallpox. The diagnosis from grippe is sometimes exceedingly difficult, as rhinitis and tracheobronchitis may not be present in grippe, and on the other hand ocular-nasal catarrh may be present in variola. In certain forms of measles there may be backache with slight catarrh. The sign of Koplik—*i.e.*, whitish-blue spots near the orifice of the canal of Steno—should be sought for, as it is usually only found in measles. In scarlet fever, the special form of angina, typhoid fever, the characteristic aspect of the tongue, are sufficient indications in most cases. Pneumonia is characterized by a sharp stitch in the side, and a diminished lung expansion. Still in some cases it will be well to wait until the eruption comes out.

The first period in smallpox lasts from two to four days, and then the eruption makes its appearance, preceded by a rash which is seen in one case out of five. This eruption is erythematous, urticarial, morbillous, or scarlatiniform, purpuric or hemorrhagic. The first two are rare, but the rash resembling that seen in measles or scarlet fever is often observed. There is of course none of the eruption seen in the throat in these latter diseases, and the pulse is not so rapid as in scarlet fever. Once the eruption has come out, the diagnosis can be made more readily. At the start, when the papules are still very small, a mistake often made is to consider the case one of pimply measles. But the appearance of the throat is quite

different in this disease. Koplik's sign may exist. In smallpox, however, the disease rapidly takes on quite a different appearance, and then the diagnosis is to be made from chicken-pox. It has been said that in chicken-pox there is a good general condition, moderate fever, and a slight eruption. These aphorisms are all false, according to Dr. Roger. Chicken-pox may be very serious, and bring about death without complications, the temperature may be very high, and as for the eruption it may be very profuse. Dr. Roger in one case counted 360 bullæ on the face of a patient suffering from chicken-pox. According to this authority, it is hard to make a mistake if the eruptive element is examined with care. In variola the papulo-pustule is round and sunk into the dermis, whereas in chicken-pox there are small papules, quite superficial, which get to be bullous very soon after the eruption has taken place. The bulla is oval and flattened out, and the edges are irregular in outline and surrounded by a red circle. The liquid inside is quite clear. On the soft palate the eruption is also quite different, being superficial in chicken-pox and the reverse in smallpox.

The eruption in smallpox begins on the face and goes down; it may, however, in some cases come out both on the hands and the face. In chicken-pox the eruption takes place in an irregular manner, the bullæ appearing at different times, some elements having finished their course, while others are just appearing. It should, however, be remembered that in smallpox certain elements may not run their whole course, and seem to have just made their appearance, if one were to judge by their size. In such cases on closer inspection one recognizes that they are already dried up. The diagnosis between smallpox and chicken-pox is most important, as most untoward results may follow neglect in recognizing smallpox.

In hemorrhagic smallpox, when there is but a slight eruption shortly before death takes place, hemorrhages occur from the mouth, nose, and genitalia. Bloody expectoration is also seen. A remarkable symptom is that the mind of the patient remains perfectly lucid, though his condition is so serious. This hemorrhagic form is said to be seen in measles and scarlet fever, but Dr. Roger has not seen it once in 5000 cases. He cites the case of a young woman who had a purpuric rash resembling scarlet fever. Death took place in thirty-five hours, and the physician considered it was scarlet fever. Fifteen days after three persons who had taken care of the patient had smallpox, and one of them died. The examination of the blood in some cases will indicate in smallpox a mononuclear leucocytosis, or a myelocytosis, whereas in measles and scarlet fever the polynuclear cells are more abundant. In chicken-pox the condition of the blood is about the same as in smallpox. In difficult cases examination of the leucocytes will undoubtedly prove to be advantageous.

Dr. Courtin, surgeon at the Children's Hospital at Bordeaux, has been trying a novel method of treatment of chilblains, which consists in the use of a solution of hydrogen dioxide. When the child is under three years of age he uses a solution containing one part of 12-volume dioxide to three parts of water. The solution should be twice as strong with older children. If there is ulceration a saturated solution of borate of sodium should be added, to diminish the acidity, and consequently the pain. The water used should be warmed, and three baths suffice generally for a cure. They should be given for half an hour at a time, and a simple dressing of gauze and vaselin used between them.

A new form of cacodylate of sodium has been recommended by Dr. Gautier. Cacodylate of sodium when given by the mouth is apt to cause gastric disturbance on account of the formation of cacodyle. The new preparation is a dimethylarseniate of soda, and has been tried in malaria by Dr. Billiet, chief of the military hospital at Constantine. This drug was given to patients who had attacks of intermittent fever notwithstanding the giving of doses of 20 grains of quinine. After an injection of five centigrammes of methylarseniate, the fever left the patients completely, and the hematozoa disappeared from the blood. Only once or twice was it found necessary to repeat the dose. This drug would seem to be more active than quinine, and is moreover apt to increase the appetite and to bring about a multiplication of the blood-corpuscles. These results were presented to the Academy of Sciences. At the same

meeting of the Academy Drs. Regnier and Dysbury described a method of using high frequency currents to produce local anesthesia in dental surgery. A model of the teeth and gums is taken and covered with plumbago. The strength of the current is from 250 to 300 milliamperes and is applied from 25 to 30 seconds.

At a recent meeting of the Society of Obstetrics, the question of sterilized milk was discussed at length. Dr. Lepage, who is a well known accoucheur, has used sterilized milk during the last twelve years. He considers that the best variety is that which has been sterilized at the dairy itself, and not with the Soxhlet apparatus. Dr. Hutinel said there was no doubt woman's milk was superior to any other milk for infants, and he considers the various baby foods as being much more apt to cause trouble. Dr. Champetier de Ribes said he considers a little woman's milk is always better than none at all. He prefers milk sterilized with the Soxhlet apparatus, as he has seen a case of toxemia due to the absorption of toxic matters from a badly corked bottle of milk. Dr. Méry said he considers sterilized milk most useful during the four summer months.

At a recent meeting of the Society of Therapeutics Dr. Leredde spoke on the use of mercurial injections. Soluble injections should be made at a depth of three or four centimeters in the gluteal region. Injections of calomel are useful when an attempt is made to modify a persistent form of syphilis. Gray oil, which is a mixture of vaselin and mercury, has caused in one of his patients a severe attack of stomatitis. Dr. Leredde prefers the more rapid treatment by injections, and thinks the slight pain caused by them is less important than the dyspepsia due to the use of mercury by the mouth.

Dr. Mabille spoke of a case of poisoning by colchicine, where the patient took four to six milligrammes of colchicine every day. There was diarrhea, hypothermia, and nervous symptoms. Professor Pouchet remarked that it is in such cases that the rule laid down by the English authors that the drug is to be stopped when diarrhea comes on proves to be correct. Dr. Robin said he had been using hyoscine in five cases of tremor (chorea, paralysis agitans, and senile tremulation). From one- to five-tenths of a milligramme was injected daily. Good results were obtained in four cases.

The use of potatoes in diabetes is highly recommended by Dr. Mosse. From a kilogramme to a kilogramme and a half should be taken daily. The general symptoms, he asserts, improve rapidly.

Notes and Queries.

VACCINATION, SMALLPOX, AND THE CASE OF DR. PFEIFFER.

The case of Dr. Immanuel Pfeiffer, now suffering with smallpox at his residence in Bedford, Mass., is one of more than ordinary interest in consequence of the peculiar circumstances under which the disease, in this instance, was contracted.

Dr. Pfeiffer, a native of Denmark, came to Boston a few years ago to practice medicine. He had previously practiced at New Bedford, Pittsfield, and North Adams in this State, and while at North Adams had achieved considerable notoriety by claiming to have abstained from food for a period of several weeks, after the manner of Dr. Tanner, the Italian Succi, and others. Soon after coming to Boston he appeared at a hearing at the State House as a vigorous opponent of the law requiring the registration of physicians.

Early during the present epidemic of smallpox, and while vaccination was being conducted in Boston and the neighboring cities, he asserted himself as an opponent of vaccination. So great was this opposition on the part of Dr. Pfeiffer and others, together with their asserted disbelief in the protective power of vaccination, as to lead to a challenge from the chairman of the Board of Health of Boston, stating that any unvaccinated person who desired to visit either of the smallpox hospitals of Boston should have the privilege of doing so. No unvaccinated person accepted the offer, and subsequently Dr. Pfeiffer, upon his own urgent request, was allowed to visit the hospital at Gallup's Island, on Thursday, January 23, and to see some of the severe cases of smallpox which had been sent there for care and treatment.

Dr. Pfeiffer, however, had been vaccinated, as he admitted, about sixty years ago. While in the hospital he had an opportunity to come into pretty close contact with those who were sick, and to breathe the

more or less infected air of the wards. Due precautions were taken while he was there, and at the time of his departure, to prevent any infection from being carried away in his clothes.

On his return to the city the daily papers published a statement of his foolhardy experiment, with criticisms upon the freedom with which he had voluntarily mingled with crowds of people, attended a public meeting, etc. On January 28 he appeared at a hearing before the Committee on Public Health, at the State House, as a petitioner for the abolition of compulsory vaccination, denouncing in a most impassioned manner the State laws upon this subject, boldly asserting his contempt for vaccination, and intimating that any one like himself, who had neglected vaccination for sixty years, might expose himself to the disease with impunity. While speaking before this committee he appeared as a man of vigorous, robust constitution, in excellent health, nearly six feet in height, and weighing not far from 200 pounds. He was apparently considerably younger than the age which he admitted.

At an adjourned hearing which was held on February 4, twelve days after his exposure at Gallup's Island, Dr. Pfeiffer was not present, notwithstanding his apparent deep interest in the subject.

The incubation period of smallpox varies within quite narrow limits, and may be stated as from ten to sixteen days, but the majority of cases are taken ill in from twelve to fourteen days after the date of exposure.

Early during the week ending February 8, active search for Dr. Pfeiffer was made, and although he was traced from one part of the city to another, he was not found until Saturday, February 8, at his country residence at Bedford, where he was seriously ill with smallpox.

The condition of this man, who had not been vaccinated for sixty years, and had been exposed for not more than a single hour to the direct infection of smallpox, may very properly be compared with that of well vaccinated physicians, nurses, and other attendants, who had been exposed to the same infection throughout the winter, without taking the disease in a single instance.

This experiment has no special scientific value, other than to add to accumulated testimony relating to the contagious character of smallpox, the protective power of vaccination and revaccination, the danger of their neglect, and the confirmation of the incubatory period, the date and hour of exposure being known.

The utter want of common sense by which the experimenter becomes the victim of his own folly is none the less apparent.—*Boston Medical and Surgical Journal,* Feb. 19, 1902.

TAKA-DIASTASE.

In an interesting address published in the *Scottish Medical and Surgical Journal* for February, 1902, Dr. Takamine told the following amusing anecdote when speaking of taka-diastase:

"Once upon a time there was a botanist who one day went into a mountain in search of new plants, when he suddenly observed in the distance an enormous serpent looking at a poor farmer. At the next instant the botanist found that the serpent swallowed the man, naturally causing a big lump in its digestive canal. While he was wondering what the serpent was going to do, he observed that it crawled along and ate a few leaves of a certain plant. In the course of a few minutes, to his astonishment, the large lump began to disappear very rapidly, and in a very short time the serpent ran away without apparent discomfort. The idea struck the botanist at once that the plant must possess wonderful digestive power, hence he congratulated himself on such a discovery, and filled his pockets with the plant, and started home. On his way home he became hungry, and stopped at the roadside tea-house, where rice cakes were on sale. While he was eating the cake he got into conversation with the bystanders, and at last made a wager that he could eat so many rice cakes, which was really impossible for an ordinary person to eat. The botanist kept on eating, and when he was nearly brim full he thought that it was time to utilize his newly-discovered, wonderful digestive plant. To the astonishment of the bystanders, a few minutes after the botanist ate the plant, there was found on the seat a big pile of rice cakes where the botanist had been sitting, and the man himself was thoroughly digested. It was evident that this plant was to digest human beings, and had no action whatever on starchy food."